1996 AEA Catalog

Data Controllers

Software

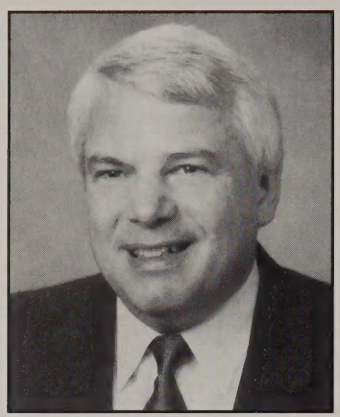
Antennas

Antenna Analysts

Remote Control

Keyers

The Leader in Technology



Rod L. Proctor, KI7ZI
President

New Products

- ***DSP-232 Multi-Mode Data Controller***
- ***PK-12 Packet Controller***
- ***PK-96 TheNet Node firmware***
- ***GPS firmware upgrades for the PK-12, PK-96, PK-232MBX, and PK-900***
- ***PC PakRatt Lite & APRS software included with PK-12 & PK-96***
- ***APRS Adapter Cable for GPS use***
- ***New PC PakRatt for Windows 2.0***
- ***New AEA FAX III***
- ***New AEA ACARS***
- ***New Log Windows 3.0***
- ***New MacRatt III***
- ***DM-1 Deviation Meter***
- ***KKCOM, software for the KK-1 Keyboard Keyer***
- ***AACOM, software for the SWR-121 Antenna Analysts***
- ***New 30-137 and 150-400 Antenna Analyst***
- ***New PlotCon software for the 30-137 and 150-400 Antenna Analysts***

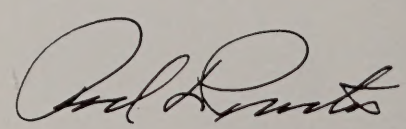
As you can see from this catalog, our development team has been very busy in 1995. During the last year, our major development was the DSP-232 multi-mode controller. It is new from top to bottom. The hardware is new and the firmware was rewritten from the ground up. Since we have been working on the PK-232 for about ten years, it was quite a task to create all of its functions in the DSP-232 with a one year schedule. We even rewrote the manual. You are going to have the same long life with the DSP-232 as you did with the PK-232.

The DSP-232 has a hardware platform that will allow many new functions to be added as future enhancements. There is even a plug-in slot for additional hardware, we have some great ideas for future applications. Digital Signal Processing is replacing the conventional audio circuits we have all used for the last 40 years. We are on the leading edge of what this technology can do and the future is truly exciting.

The PK-232 still has a place in the product line as the lowest cost solution for an entry level multi-mode data controller. It is a tough act to follow, but the DSP-232 will raise performance levels to new heights. We will continue maintenance upgrades for the PK-232, just like the GPS support we just added.

We have lots of other new things to talk about, like Log Windows 3.0. A great deal of the enjoyment of amateur radio is logging our contacts. When the bands are dead and we are browsing through our logs remembering when propagation was better, it is fun to re-live a few memories. If you are a casual user or an avid DX'er you will enjoy seeing what you have done in the past and where the opportunities are for the future. Log Windows is one of those programs that will continue to surprise you months after you start using it.

I have to say something about our Customer Service Team. AEA has outstanding customer service, we want you to be successful with our products. Everyone at AEA is a customer service person. I take calls like everyone else. There is no better way to see what's going on than to answer a FAX, letter, or phone call. We look forward to hearing from you. Many of your calls have helped us improve our products and manuals, my thanks to all of you.



Rod L. Proctor, KI7ZI
President

Are you up to date?

Upgrades

TNC Firmware and Computer Software

All prices include shipping and handling

Cutting-edge

AEA is constantly adding more features to our software and data controllers, giving you the chance to upgrade your equipment and stay on the cutting edge of amateur radio. We believe in building equipment that will adapt to future technology changes. And, as you can see by the number of upgrades we offer, AEA is committed to keeping you up to date.

Upgrades are sold only through AEA directly. To upgrade your AEA data controller or computer software, call AEA's Update Hotline at (206) 774-1722 between 8:00 am and 4:30 pm Pacific time, Monday—Friday. Tell us what you have and what upgrade you want (or we can help you figure out what you need) and we will ship it to you as fast as possible.

For new equipment, we suggest you buy from any of our worldwide network of authorized dealers. They can usually give you better pricing than we can.

Data Controller Upgrade Table — **Call AEA's Upgrade Hotline at (206) 774-1722**

If you have:	You need:	Outside Wash.	Inside Wash.	Canada	Foreign
PK-232 w/o MBX	MBX Daughterboard	$100.50	$108.74	$110.00	$125.00
PK-232MBX No PACTOR	PACTOR/Gateway or	80.50	87.10	90.00	95.00
PK-232MBX w/PACTOR (3/93)	GPS firmware	25.50	27.59	35.00	40.00
PK-900 No PACTOR (before 3/93)	PACTOR/Gateway/GPS	$80.50	$87.10	$90.00	$95.00
PK-900 w/PACTOR (3/93)	Gateway/GPS	35.50	38.41	45.00	50.00
DSP-2232 No PACTOR	PACTOR/Gateway	$20.50	$22.18	$25.00	$35.00
DSP-1232 No PACTOR	PACTOR/Gateway	20.50	22.18	25.00	35.00
PK-96 w/o TheNet	TheNet *you burn EPROM	$10.00	$10.82	$10.00	$10.00
	TheNet *we burn EPROM	30.00	32.46	30.00	30.00
PK-96 18K Mailbox (32K RAM)	100K Mailbox (128K RAM)	55.50	60.05	65.00	70.00
PK-96 18K Mailbox	GPS firmware	10.00	10.82	10.00	10.00
PK-12 w/o GPS	GPS firmware	$10.00	$10.82	$10.00	$10.00
PK-12 18K Mailbox (32K RAM)	100K Mailbox (100K RAM)	55.50	60.05	65.00	70.00

Software Upgrade Table — **Call AEA's Upgrade Hotline at (206) 774-1722**

If you have:	You need:	Outside Wash.	Inside Wash.	Canada	Foreign
AEA FAX	AEA FAX III	$50.50	$54.64	$60.00	$65.00
AEA FAX II	AEA FAX III	35.50	38.41	45.00	50.00
AEA FAX III	FAX III to ACARS upgrade	$55.50	$60.05	$65.00	$70.00
AEA ACARS	ACARS to FAX III upgrade	$75.50	$81.69	$85.00	$90.00
Log Windows 1.0	Log Windows 3.0	$40.50	$43.82	$50.00	$55.00
Log Windows 2.0	Log Windows 3.0	40.50	43.82	50.00	55.00
PC PakRatt for Windows 1.0	PC PakRatt for Windows 2.0	$35.50	$38.41	$45.00	$50.00
PC PakRatt for DOS 1.06	PC PakRatt II for DOS v. 5.5	$50.45	$54.59	$59.95	$64.95
PC PakRatt for DOS 2.4 G	PC PakRatt II for DOS v. 5.5	50.45	54.59	59.95	64.95
PC PakRatt for DOS 4.0 D	PC PakRatt II for DOS v. 5.5	50.45	54.59	59.95	64.95
PC PakRatt for DOS 5.1	PC PakRatt II for DOS v. 5.5	25.50	27.59	35.00	40.00

Advanced Electronic Applications, Inc.
P. O. Box C2160 • Lynnwood, WA 98036
Upgrade Hotline: (206) 774-1722 • Fax: (206) 775-2340

DSP-2232
DSP-1232

Multi-Mode Digital Signal Processors

Features

- ***Dual Simultaneous Ports (2232)***
- ***True Gateway between modes & radio ports***
- ***9600 & 1200bps packet***
- ***Signal Identification (SIAM™)***
- ***Auto satellite correction***
- ***Great modes, plus the satellites***
- ***Hardware HDLC***
- ***Digital Signal Processor***
- ***All standard modes***
- ***PSK modems***
- ***Hardware Memory ARQ***
- ***Full MailDrop facilities***

Specifications

Demodulator	Motorola 56001 Digital Signal Processor running at 24 MHz
Modulator	Phase continuous sinewave, AFSK generator
Modulator output level	5-100 mV RMS, adjustable with side-panel controls
Processor system	Hitachi 64180
RAM	64K Lithium battery-backed
ROM	Up to 384K (DSP uses 128K)
Hardware HDLC	Zilog 8530 SCC
Power requirements	+13 VDC (+12 to +16 VDC) @ 1.1A
Input/Output Connections	
Radio interface	Two 5-pin DIN connectors. Simultaneous operation on the DSP-2232, software selectable on the DSP-1232
Direct FSK outputs	Normal/Reverse
CW keying output	+100 VDC @ 100 mA max or -30 VDC @ 20 mA max
Terminal interface	RS-232-C DB-9P connector with hardware/software handshake
Terminal data rates	Autobaud settings at 300, 600, 1200, 2400, 4800, 9600, and 19,200 bps
Printer interface	IBM compatible 25-pin bi-directional parallel port (DB-25 connector)
Physical	
Dimensions	12" (305mm)W x 9.8" (249mm)D x 2.9" (73.7mm)H
Weight	3 lbs, 12 oz (1.7 kg)

Top of the Line Controllers

This is the Cadillac and the Corvette of data controllers rolled into one. Work satellites, HF, VHF, even Gateway between HF and VHF. The DSP-1232 with two switchable ports, and the DSP-2232 with two simultaneous ports, provide a new level of performance and versatility in data controllers. The capabilities of both are endless.

Built for the Future

The great advantage of having Digital Signal Processors in your data controller is that new modems or modes only require new software. Unlike an analog modem which usually requires that new hardware be installed. In addition, DSPs provide filtering that analog machines just can't match. Plus, if you decide to buy the single port DSP-1232, you can fully upgrade to a dual port 2232 at a later time.

All Proven Modes

PACTOR, VHF/HF Packet, AMTOR/SITOR, Baudot, ASCII, Morse, TDM, and NAVTEX. As new modes become available, all you need are replacement EPROMs. Satellite and all the modems that made the PK-232MBX a legend are included, plus the K9NG and G3RUH compatible 9600 bps modems. For specific modems included, see the opposite page.

Full MailDrop

You get the latest version of MailDrop with selective control of third party traffic and bulletin board system (BBS) compatibility so messages can be automatically forwarded.

True Gateway & Dual Ports

The DSP-2232 has the ability to create a gateway from packet-to-AMTOR, packet to PACTOR, and of course, packet-to-packet. Since you have dual simultaneous radio ports, the DSP-2232 allows cross-mode gateway operation. Packet users connecting to Port 2 have the ability to monitor and link to other AMTOR, PACTOR, or even packet stations using your HF radio on Port 1. The dual ports also offer simultaneous HF and VHF monitoring, or running two VHF packet radios at the same time. You can also listen to your local DX node while working AMTOR on an HF frequency.

LCD Readout

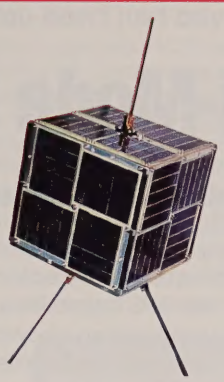
The unique LCD read-out on the DSP-2232 displays the mode and diagnostics for both radio ports, giving you information on connect and system status. On packet, the LCD displays the call sign of stations heard. On RTTY, AMTOR, and PACTOR, text received on the air is displayed. This is true for both radio ports of the DSP-2232

TDM Capability

As with all AEA multi-mode data controllers, these DSPs will decode Time Division Multiplex (TDM) signals. TDM is a mode resembling FEC AMTOR used in commercial applications. TDM uses one sub-carrier, but assigns separate data channels to different time slots.

A Satellite Workhorse

The satellite modems included make the DSP-2232 and 1232 the premier satellite data controllers on the market. The automatic Doppler correction keeps the signals coming in clear. Up/down Doppler shift for PSK modems and outputs for up/down frequency stepping to control the radio's frequency included. The onboard 9600 bps modem lets you bounce packets off satellites and communicate with terrestrial stations at a blazing rate. With the optional AEA WeFax 256, receive real-time, true grayscale images from either NOAA HF WeFax Service or the NOAA APT Satellite Service. Take a look at the Satellite modems available to you (listed to the right) and you will see how AEA has engineered the DSP-2232 and DSP-1232 to be the best tool for working the satellites.



Full upgrade from 1232 to 2232

If you choose to buy the 1232, you can fully upgrade to the 2232 at any time. We will send you all the hardware you need to have the most powerful DSP Multi-mode data controller made.

Modes and Modems for the DSP-2232 and the DSP-1232

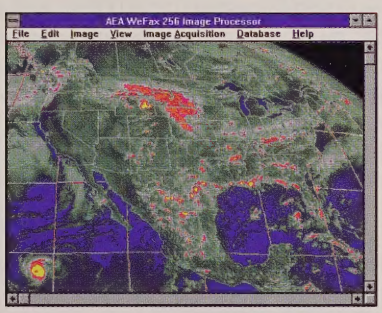
Modes	
Send and receive	ASCII, AMTOR (ARQ & FEC), Baudot, Fax (2-color), Morse code, Packet (AX.25 and KISS), PACTOR
Receive only	Signal Identification, AMTOR ARQ Listen, Bit-inverted Baudot RTTY, NAVTEX, TDM, 250 gray shade fax, PACTOR Listen
Modems	
Port 1	RTTY/TOR 170: 2125/2295, RTTY/TOR 170: 1445/1275, RTTY/TOR 425: 2125/2250, RTTY/TOR 850: 2125/2975, RTTY/TOR 200: PACTOR 2110/2310, RTTY/TOR 200: PACTOR 1460/1260, Packet 300 bps HF 2110/2310, Packet 300 bps HF 1460/1260, Packet 1200 bps VHF, Packet 1200 bps PACSAT, Packet 1200 bps PSK, Packet 2400 bps V.26B, Packet 4800 bps PACSAT, Packet 4800 bps PSK, Packet 9600 bps FSK K9NG/G3RUH, Morse 750 Hz, Analog Fax HF, Analog Fax APT, Analog SSTV, DSP data 400 bps OSCAR-13, RTTY/TOR 1200 bps ASCII OSCAR-11, DSP data spectrum, Packet 1200 bps MSK, Packet 2400 bps MSK
Port 2	Packet 200 bps HF 2110/2310, Packet 1200 bps VHF, Packet 1200 bps PACSAT, Packet 2400 bps V.26B, Packet 9600 bps FSK K9NG/G3RUH, DSP data 400 bps OSCAR-13, Packet 1200 bps MSK, Packet 2400 bps MSK
Dual port	RTTY/TOR 170: 2125/2295; Packet 300 bps HF 2110/2310; Packet 1200 bps VHF; RTTY/TOR 200: PACTOR 2110/2310;; Packet 300 bps HF 2110/2310; Packet 1200 bps VHF; RTTY/TOR 200: PACTOR 2110/2310; Packet 1200 bps VHF; Packet 1200 bps VHF; Packet 1200 bps VHF

And Now For the Weather...

AEA's WeFax 256 is the Microsoft Windows-based WeFax reception program specifically designed for DSP-2232/1232 and DSP-232 (shown later in this catalog) owners. WeFax 256 displays, in real time, gray scale images from the NOAA HF WeFax Service and the NOAA APT Satellite Service.

Two resolutions (500 or 250 pixels per line) insure WeFax 256 will work on your system.

There is a scrollable receive buffer capable of operating in either stop or loop modes. Plus, there is a complete Image Processor, giving you the ability to enhance the WeFax image.



Colorize images and convert them to .BMP, .GIF, .PCX, .TIF, and .JPG image formats. You can even configure the program for unattended captures of WeFax images.

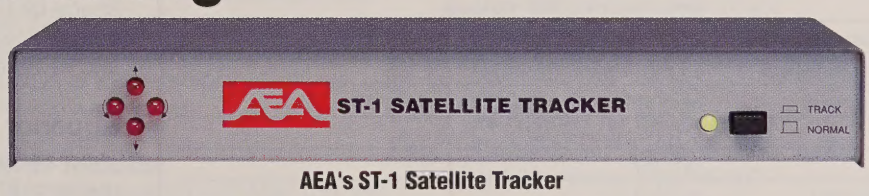
Digital Satellite Accessories

WeFax 256 ST-1

Requires an AEA DSP-based multi-mode TNC with a receiver and antenna system for either HF, APT VHF, or microwave operation; a 386 PC-compatible computer capable of running Windows 3.1 or better, 5 MB of free hard disk space , and a VGA 256-color monitor and video card or better.

Complete Satellite Tracking

AEA has the solution for tracking and tuning— the ST-1. The ST-1 offers satellite users hardware and software for automatic antenna tracking and automatic transceiver tuning.



AEA's ST-1 Satellite Tracker

Here's how it works

As the satellite nears the horizon, the ST-1 points the antennas in the proper direction and tunes the rig to the right up-link and down-link frequencies. As the satellite moves into the field of view, the ST-1 controls the antenna's tracking. The ST-1 also controls transceiver tuning and corrects for the Doppler shift throughout the pass. The ST-1 makes low orbit satellite tracking and tuning as simple as it could possibly be!

Works with popular software

To use the ST-1, you need an IBM PC-compatible computer. The software that comes with the ST-1 is a completely resident program (TSR). Software such as InstanTrack, QuikTrak, RealTrack, PG_AEA, PB, and PG are fully compatible. The ST-1 even allows unattended operation on Packet satellites (PACSATS)! The ST-1 is a stand-alone unit, so your expansion slots are safe. When turned off, the PC's serial and parallel ports are passed through, so you don't lose them. Its small footprint allows it to fit most anywhere.

Controls Rotors & Radios

The ST-1 automatically controls the Yaesu 5400/5600 Azimuth-Elevation rotors and can be used with other rotors as well. The ST-1 also automatically tunes many transceivers including the FT736, TS-790, IC-970, and the IC475/275. RS-232 adapters are not required for these radios either.

Requires

Requires an IBM PC-compatible computer capable of running InstanTrack, QuikTrak, or RealTrack and 13.6 VDC @ 1A.

PK-900

Simultaneous Dual Port Multi-Mode Data Controller

Features

- *Dual simultaneous ports*
- *True Gateway*
- *GPS firmware*
- *Hardware Memory ARQ*
- *Signal identification (SIAM™)*
- *Node operation*
- *True DCD State Machine*
- *Hardware HDLC*
- *8-pole Chebyshev filter*
- *Modem disconnect header*
- *9600 bps option*
- *AEA FAX III option*
- *AEA Host mode*
- *LCD readout*
- *Windows™ control program available*
- *CW key out jacks*
- *External AFSK adjustments*
- *TCP/IP compatible*

A Multi-Mode Powerhouse

The real strength of the PK-900 is its superior design. It's a no-compromise data controller designed for dual port multi-mode operation. All the standard modes are included: PACTOR, Packet, AMTOR, ASCII, Baudot, Morse, B&W Fax transmission and reception, as well as ARQE3, NAVTEX, TDM, 16-level gray scale fax with false-color enhancement (optional software available), and signal identification when you're scanning the bands. Now, with the latest update to the firmware, the PK-900 has GPS capabilities. Three dedicated processors (one for the system and one for each radio port) and an innovative circuit design offer unmatched power and flexibility. Its performance is comparable to units costing hundreds, even thousands of dollars more.

Dual Simultaneous Radio Ports

Switch between radio ports with a keystroke and still receive simultaneous signals from both ports.

SIAM™ detects inbound signals

Signal Identification & Acquisition Mode automatically detects incoming Baudot, ASCII, AMTOR/SITOR, PACTOR, and TDM signals, and with a few keystrokes switches to the recognized mode and starts displaying data. For example, you may find a RTTY signal that sounds normal, but won't print on your screen. You can use SIAM and find that the other operators are using USB, instead of LSB. Press one key and the PK-900 will switch to the inverted mode and copy will begin to flow across the screen.

The Power of Gateway

Gateway from Packet to AMTOR, Packet to PACTOR, and Packet to Packet. Under your control, packet users connecting to Port 2 can monitor and link to other AMTOR, PACTOR, and even packet stations using the HF radio on Port 1. The Gateway firmware of the PK-900 lets other digital operators use your PK-900 as a node, which helps free channel traffic, resulting in increased throughput for all. The way AEA designed the Gateway allows the PK-900 to identify TCP/IP, TheNet, and NETROM stations so you always know "who is out there." There are two Gateway heard lists: one for stations heard and one for nodes heard. With Gateway, you also have control of who can connect to the PK-900.

Full Featured MailDrop

There is 17K of battery-backed, dynamically allocated mailbox space for Packet, AMTOR, and PACTOR messages. MailDrop automatically controls third-party traffic and receive, forward, and reverse-forward messaging.

Superior Filtering—the true sign of quality

The success of any HF data controller can be boiled down to the quality of filters it offers. AEA's PK-232MBX, the most popular multi-mode data controller ever, was designed with great filters. The PK-900 borrows filtering technology from the PK-232 and then goes a leap beyond. The high-performance bandpass filter limiter discriminator gives you excellent filtering on Port 1. The 8-pole Chebyshev bandpass filter offers six software-selectable tone shifts—170-100Hz. The 6-pole, post detection linear phase low pass filter is optimized for data rates from 45 to 2000 baud. We dare you to compare the filtering of any other multi-mode to the PK-900. AEA has included hardware memory ARQ. There is even Packet Lite for enhanced HF operation. The PK-900 has the high technology filtering and features necessary to make contacts in marginal HF conditions, like those existing today.

Specifications for the PK-900

Demodulator	Port 1: 8-pole Chebyshev bandpass filter, 4-pole discriminator, 5-pole post-detection low pass filter. Port 2: AMD 7910 Modem
Modulator	Programmable phase-continuous sinewave, AFSK generator
Modulator output level	5-100 mV RMS
Processor system	Hitachi 64180, Motorola 68HC05B4, Motorola 68HC05C4
RAM	64K Lithium battery-backed
ROM	Up to 256K
Hardware HDLC	Zilog 8530 SCC
Power requirements	+12 to +16 VDC @ 1.1A
Input/Output Connections	
Radio interface	Two 5-pin DIN connectors
Direct FSK outputs	Normal/Reverse
CW keying output	+100 VDC @ 100 mA max or -30 VDC @ 20 mA
Terminal interface	RS-232-C 25-pin DB-25 connector with hardware/software handshake
Terminal data rates	Autobaud settings at 300, 600, 1200, 2400, 4800, 9600, and 19,200 bps
Printer interface	IBM compatible 25-pin bi-directional parallel port (DB-25 connector)
Physical	
Dimensions	11.8" (300mm)W x 12" (305mm)D x 3.5" (89mm)H
Weight	6 lbs, 4 oz (2.84 kg)

Connect with the PK-900

AEA's design philosophy is easily seen when you look at the number of input/output connections on the back of the PK-900. The engineers at AEA are digital operators themselves and know the importance of having easy access to input and output connectors.

GPS Firmware

This firmware lets you remotely control the GPS commands, remotely poll the PK-900 for position information, and even remotely program various GPS receivers. Stand Alone Tracking is possible. The firmware is compatible with GPS, Loran, ARNAV, and Ultimeter II weather stations. With the PK-900, you can transmit position information in HF or VHF packet on Port 2 and work other HF stations on Port 1. You can transmit your position at 9600 bps with the option board on Port 2.

LCD display

The large, easy-to-read backlit display provides all status and mode information for both ports. A 20-segment multi-mode bar graph makes HF tuning easy. Also informs you of new Packet, AMTOR, & PACTOR mail!

You're in Command

AEA has special commands which make the PK-900 a superior performer. The ARXTOR command allows for detection of AMTOR or PACTOR signals, identifying which type of signal it is, and switching your PK-900 to that mode. The CFROM and DFROM commands let you choose who may or may not connect to the PK-900. AEA is devoted to providing digital operators command sets which are easy to use and powerful.

Control your controller

All AEA data controllers are equipped with AEA's extensive Host mode for superior software support. The PK-900 can be used with AEA's PC PakRatt for Windows™ for Microsoft Windows users, AEA's PC PakRatt II for DOS for other IBM-compatible users, AEA's MacRatt III for Macintosh users, as well as many other popular control programs.

The future is in 9600 baud

9600 bps packet is the wave of the future and the optional 9600 bps packet board makes getting up to speed easy. The 9600 bps modem is K9NG and G3RUH compatible, allowing you to bounce packets off satellites or communicate with terrestrial stations at speeds up to eight times as fast as the conventional 1200 bps rate.

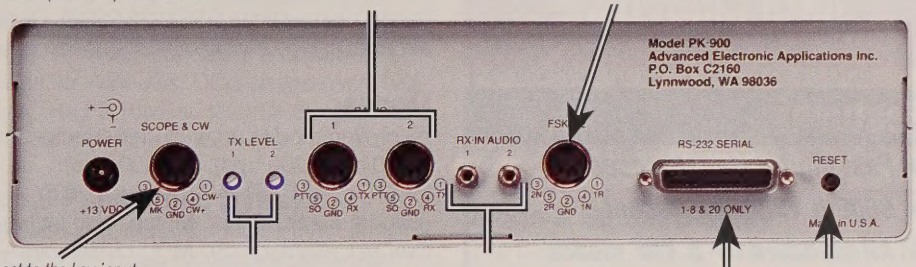
Installing the 9600 bps option board is very easy. You open the PK-900 cover, remove four screws from the PC board, add four spacers, plug in the board, and replace the screws.

You don't just buy the front of a data controller. . .

Why not just use a PCB data controller? Why not go for the smallest data controller? Take a look at the back of AEA data controllers and you will see why. We have built our controllers to make life simpler for you. There are more input connections, more output connections, more external adjustments, and room for future growth and upgradability. PCB data controllers are difficult to work with. Small controllers don't provide proper connections and expandability. AEA has engineered data controllers that are compatible with the equipment you have now, offer convenient adjusting, and are upgradable for future applications.

The PK-900 has two radio ports that you can use at the same time. Radio Port 1 lets you use all the VHF & HF modes. Radio Port 2 lets you use HF & VHF packet, at speeds up to 9600 bps with option board.

Instead of going through the mic jack, use the FSK connector which allows you to use your transceiver to change tones for the HF modes like RTTY & AMTOR.



Connect to the key input on your radio, type on the computer, & transmit CW. Also doubles as a tuning scope connector.

Individual transmit level adjustments for both radio ports

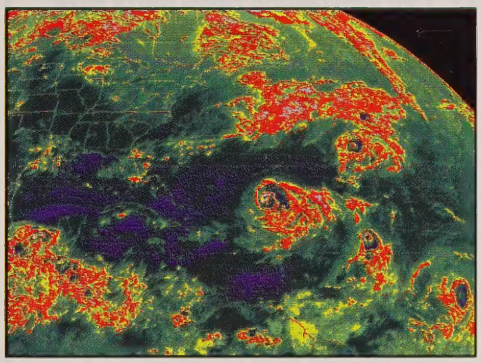
The receive audio in connectors (1 for each radio port) lets you receive audio without using the mic jack. Great for the SWLs.

RS-232 Serial Computer Port

External reset button

Winter Warning!

AEA FAX III 900 is an optional WeFax receiving software program for the PK-900 that lets you get the weather from ground stations—no more waiting for the news. All the features that are in AEA FAX III are included in the FAX III 900—the only difference is that you won't get a demodulator with the FAX III 900 because the hardware is already built into the PK-900. With this program, you can receive WeFax images in 16 shades of gray, then colorize the images with the 256 color palette. Then you can export the images to .PCX or .GIF files for use in other applications.



AEA FAX III 900 for WeFax Reception

You want modems?

The PK-900 offers twenty software selectable modems. There are optimized modems for AMTOR, PACTOR, 45 baud teletype, and packet. There is even a disconnect header, so you can plug in your own modem. Modem selection is as easy as typing a command for the one you want.

Modems Include:

Port 1: FSK 45 bps 170 Hz, FSK 100 bps 170 Hz, FSK 45 bps 200 Hz, FSK 300 bps 200 Hz, FSK 100 bps 425 Hz, FSK 100 bps 850 Hz, Analog, Fax, FSK 300 bps 200 Hz, FSK 1200 bps 1000 Hz, Morse.
Port 2: HF Packet, VHF Packet, Internal option for 9600 baud, and modem disconnect header.

Accessories for your PK-900:

For true cutting-edge digital operation, consider these products:

IsoLoop 10-30 HF Antenna Page 22
A small loop antenna with big antenna performance. Great for amateurs with limited space.

IsoPole Antenna Page 21
Superior performing decoupled VHF antenna.

PC PAKRATT for Windows™ Page 14
Windows software that makes it easier to use the full capabilities of your PK-900.

DM-1 Deviation Meter Page 20
Deviation Meter makes setting deviation for 9600 bps Packet operation simple.

For the following options, call our upgrade hotline at (206) 774-1722:

AEA FAX III 900 Option
Receives and displays fax signals in 16 shades of gray and in false-color as shown above.

9600 bps Option
Work satellites or terrestrial stations at 9600 bps. High Performance, easy installation.

DSP-232

Dual Switchable Port DSP Multi-Mode Data Controller

The Mode Warrior

NEW

The plug and play DSP-232 is AEA's new state-of-the-art multi-mode data controller designed around a high-speed digital signal processor which provides the ultimate in signal filtering, modem performance, and flexibility. AEA is known for excellent filtering systems. Digital signal processing combined with hardware memory ARQ, true DCD, and hardware HDLC provide the best filtering available, and AEA has been building DSP multi-mode controllers longer than anyone (since 1991 with the DSP1232/2232). Once you see the features, the upgrade capability, and the affordability, your view of multi-mode controllers will be changed forever.

Features

- ***Fast digital signal processor***
- ***9600 & 1200 bps Packet***
- ***All standard HF & VHF modes***
- ***Mailbox expandable to 242K***
- ***Full MailDrop facility for Packet, PACTOR, and AMTOR***
- ***Two switchable radio ports with rear-panel AFSK adjustments and another adjustment for 9600 bps***
- ***GPS firmware which is compatible with GPS, Loran, ARNAV, and ULTIMETER II weather stations***
- ***GPS commands are remotely programmable***
- ***Gateway firmware which works as a node for faster throughput***
- ***SIAM™ signal identification***
- ***Memory ARQ***
- ***Identify TCP/IP, TheNet & NetRom***

Modes

All proven modes are included. Packet VHF (9600 and 1200 bps) HF (300 bps), PACTOR, AMTOR (ARQ & FEC), RTTY (Baudot & ASCII), and Morse. Also includes: Output Calibration, SIAM™, 17 software selectable modems, High/Low FSK tone pairs for international use.

Upgradable

The DSP-232 was designed using the 32 bit Motorola 68340 as the host processor and the Analog Devices 2105 DSP processor. This powerful combination allows the DSP-232 to handle new digital modes, like PACTOR II. No longer are you bound to the constraints of analog modems and slow 8 bit host processors. This is your digital platform for the future.

Full MailDrop Facilities

There is 18K (32K RAM) of mailbox space standard which is expandable to a whopping 242K (256K RAM)—you will always have the message space you need. The MailDrop accepts messages in packet, PACTOR, and AMTOR. The internal battery holds the messages when the unit is turned off. The mail LED on the front panel display will alert you to new PACTOR, AMTOR, and packet mail. MailDrop also controls 3rd party traffic and receives, forwards, and reverse forwards messages. You have complete control of the MailDrop with AEA's advanced commands. CFROM and DFROM let you select who may or may not connect and leave a message. MHeard lists the 18 most recently heard stations. Leave your DSP-232 on all the time, it will continue to receive/route mail and serve as a node, like all other AEA data controllers.

AEA's DSP-232 Multi-Mode Data Controller

Specifications for the DSP-232

Modem	Analog Devices 2105 Digital Signal Processor running at 12.3 MHz in conjunction with Analog Devices 28msp02 audio CODEC
Modulator output level	5-100 mV RMS, adjustable with rear panel controls for each radio port
Processor system	Motorolla 68340 running at 16.7 MHz
RAM	Battery-backed 32K standard, expandable to 256K
ROM	128K standard, expandable to 256K
Hardware HDLC	Zilog 8530 SCC
Power requirements	+12 to +16 VDC @ 1.1A
Input/Output Connections	
Radio interface	One 5-pin DIN connector. One 8-pin DIN connector
Direct FSK outputs	Normal/Reverse
Terminal interface	RS-232-C 25-pin DB-9S connector with hardware/software handshake
Terminal data rates	Autobaud settings at 300, 600, 1200, 2400, 4800, 9600, and 19,200 bps
RX Audio	Port 1 and Port 2
TX Level	Port 1, Port 2, and 9600 bps
Other	Station ground connector and external reset button
Physical	
Dimensions	9.35" (237mm)W x 7.90" (201mm)D x 2.30" (58mm)H
Weight	3 lbs (1.36 kg)

Gateway as a Node

The Gateway firmware lets you "node-hop" to reach distant stations instead of digipeating; thereby reducing channel traffic and increasing data throughput. As with MailDrop, you have control of who uses your Gateway. Gateway also allows identification of TheNet, TCP/IP, and NETROM. There are two heard lists included with Gateway: one for stations heard and one for nodes.

Signal Identification (SIAM™)

AEA developed Signal Identification & Acquisition Mode to automatically detect incoming Baudot, ASCII, AMTOR/SITOR, and PACTOR signals, and with a few keystrokes switch to the recognized mode and start displaying data.

WeFax Reception

The DSP-232 includes a Zero-Crossing Detector for gray scale terrestrial fax reception with the optional AEA FAX III 900 WeFax receiving program. This program allows you to receive WeFax images, colorize them with 256 color, then export them to .PCX or .GIF files for use in other applications. Also compatible with AEA's WeFax 256 for Windows (see pg 3).

What's in a Name?

Why would we call our premier new product DSP-232? As you can guess, it is a combination of the legendary PK-232 and Digital Signal Processing (DSP for short). PK-232 is a nickname for the PakRatt Model PK-232 Multi-Mode Data Controller. What's PakRatt? It is a contraction that people at AEA came up with for packet/radioteletype, while working on the PK-64 years ago. The DSP-232 name shows AEA's merging of cutting-edge technology with a 19 year tradition of excellence. As you can see by the features, the DSP-232 is the new standard by which other manufacturers' equipment will be judged by.

Power Filtering with DSP

The DSP-232 continues the AEA tradition of quality signal filtering technology. Incoming signals are digitized by a high speed, analog-to-digital converter. The digitized data is then digitally filtered and analyzed by the on-board digital signal processor. The processed demodulated signals are then passed to a second processor for protocol conversion. The reverse procedure takes place when you transmit. DSP gives the DSP-232 a better shape-factor than analog filters. In addition to the DSP, we've included hardware memory ARQ for reduced errors. All this makes the DSP-232 the data controller of choice for those who want to connect in poor HF conditions.

Packet Power

Run 9600 or 1200 bps VHF and 300 bps HF packet. This is a true DCD state machine for hearing signals with an open squelch when operating 9600 and 1200 bps packet. Full-duplex packet capability lets you speed up communications by sending and receiving simultaneously. KISS mode provides compatibility with the TCP/IP protocol. There are even special GPS capabilities which allow mapping and tracking in packet.

Packet Satellites

You can use the ultimate nodes, the BBSs in the sky—the satellites! Use 9600 bps, 1200 bps PSK PACSATs, and 400 bps telemetry. Take advantage of the satellite's store-and-forward capability. The satellites are up there, use them with the DSP-232.

Control Software

AEA offers a whole line of state-of-the-art control software programs. Microsoft Windows™ users can use the powerful PC PakRatt for Windows. DOS-based users will appreciate PC PakRatt II for DOS. Macintosh users will enjoy the new MacRatt III.

Global Positioning System

A GPS-specific command set is included in the DSP-232. These commands allow the controller to be used in Stand Alone Tracking, where you take the unit mobile and transmit your position to other packet operators using Automatic Packet Reporting System software. Remote programming allows you to set and change vital GPS commands from a remote location. You can also use AEA's optional APRS adapter cable to connect a GPS receiver and a DSP-232 to a single COM port on your computer. The DSP-232 is GPS, Loran, and ARNAV compatible. It is even ULTIMETER-II compatible which allows you to set up a weather net or to hear weather nets.

Connect with the DSP-232

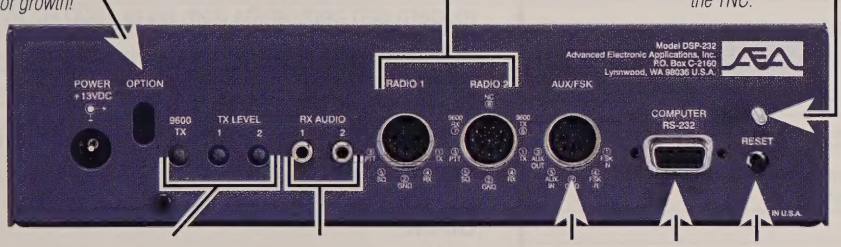
The DSP-232 has a rear panel connections for direct-FSK/Auxiliary to take advantage of your tone generating radio and AFSK port one and two. AEA gives you both the direct FSK and the AFSK options for optimum flexibility. There are two radio connections (one for each radio port), two receive audio connections (one for each radio port), plus an RS-232 computer interface. There is even an 'option' slot for future advancements—we mean it when we say this is the digital platform for the future!

The back — Just as important as the front

This 'Option' space is set aside for future applications, the DSP-232 is designed for growth!

The DSP-232 has two radio ports that you can switch between. Radio Port 1 lets you use all the VHF & HF modes. Radio Port 2 also lets you use all VHF & HF modes, plus packet at 9600 bps.

This is a feature you've wanted for years, a station ground right on the TNC.



Individual transmit level adjustments for both radio ports, plus another adjustment specifically for 9600 bps packet operation.

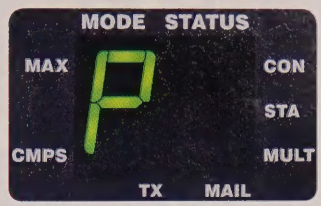
The receive audio in connectors (1 for each radio port) let you receive audio without using the mic jack. Great for the SWLs.

FSK connection for using your transceiver to change tones on HF modes.

RS-232, DB-9 computer interface

External reset button

DSP-232 Display Window



The DSP-232's unique display was born from experience. Over the last 19 years, we've built data controllers with LED lights, but they can't show the total status of the system. We've also used LCDs which are great—but rather spendy. This 7-segment LED display is the perfect solution to displaying system status in an easy-to-read format.

Mode & Status Display

The DSP-232's unique mode and status LED readout displays important system status at all times. The display is easy to see, even from across the room. Once you become accustomed to reading the display, you will wonder why all data controllers don't use it.

Special Commands

You get the GPS-specific commands which are remotely programmable & remotely pollable. There is the ARXTOR command which detects AMTOR or PACTOR signals and switches to the mode. CFROM and DFROM let you choose who connects to your TNC (radio port specific). And there is an EXPERT disable which reduces the command set to often used commands for beginners. There is the special TWIST command that allows you to optimize the 1200 bps VHF modem performance. There are lots more of these kinds of features in the works.

Accessories for your DSP-232:

For true cutting-edge digital operation, consider these products:

IsoLoop 10-30 HF Antenna Page 23
A small loop antenna with big antenna performance. Great for amateurs with limited space.

IsoPole Antenna Page 22
Superior performing decoupled VHF antenna.

PC PAKRATT for Windows™ Page 15
Windows software that makes it easier to use the full capabilities of your PK-900.

DM-1 Deviation Meter Page 21
Deviation Meter makes setting deviation for 9600 bps Packet operation simple.

WeFax 256 Page 4
AEA's Windows-based satellite WeFax receiving program.

For the following option, call our upgrade hotline at (206) 774-1722:

AEA FAX III 900 Option
Receives and displays fax signals in 16 shades of gray and in false-color.

PK-232

Dual Switchable Port Multi-Mode Data Controller

NEW GPS

Time-Tested Performance

The PK-232MBX is the most popular multi-mode data controller in the world, with over 80,000 in service. Ask around; you are sure to find many proud PK-232 MBX owners. The PK-232MBX combines all standard modes in one comprehensive unit, it offers PACTOR, VHF/HF Packet, AMTOR/SITOR, Morse, RTTY (Baudot/ASCII), black & white WeFax, TDM, as well as the commercial standard NAVTEX automated marine information service. The filtering power and AEA's dedication to providing upgrades have helped make the PK-232MBX a legend.

Features

- ***All popular HF and VHF modes***
- ***Two switchable radio ports***
- ***Gateway as a node***
- ***Hardware HDLC***
- ***Full MailDrop facility for Packet, PACTOR, and AMTOR***
- ***Signal identification (SIAM™)***
- ***New GPS firmware***
- ***Advanced command set***
- ***Identifies TCP/IP, TheNet & NetRom***
- ***20 front panel indicators***
- ***Advanced signal filtering design***
- ***CW key out jacks***
- ***External AFSK adjustment***
- ***External threshold control***
- ***Black & white WeFax***
- ***Windows™ program available***
- ***Macintosh™ program available***

GPS Firmware

We've added GPS commands to the PK-232MBX. Using APRS™ (WB4APR), you can map other HF & VHF packet users. GPS firmware is GPS, Loran, ARNAV, and ULTIMETER-II compatible. Commands are remotely programmable, remotely pollable. Allows for Stand Alone Tracking. Upgrades available for early models, see page 1.

Gateway as a Node

The Gateway firmware will support local acknowledgment (acks) of packets like a full-service node does. Using the node feature instead of digipeating increases throughput and reduces channel traffic. The Gateway also allows identification of TCP/IP, TheNet, and NETROM stations.

Full Featured MailDrop

There is 18K (32K RAM) of mailbox space for Packet, PACTOR, and AMTOR messages. The MailDrop uses a subset of popular W0RLI/WA7MBL commands plus includes AEA commands such as CFROM and DFROM for selectively choosing who may connect to your unit, MFROM and MTO commands for selecting what stations are heard when monitoring, and the enhanced MHeard which displays the 18 most recently heard stations and nodes, and gives the time and dates heard. MailDrop allows the local BBS to automatically forward and reverse-forward messages to and from your station. The PK-232MBX can also be used as the data controller "front end" with most popular BBS programs.

AEA's Legendary PK-232 Multi-Mode Data Controller

Specifications for the PK-232MBX

Demodulator	8-pole Chebyshev bandpass filter, limiter, 4-pole discriminator, 5-pole post-detection low-pass filter
Modulator	Phase continuous sinewave, AFSK generator
Modulator output level	5-200 mV RMS
Processor system	Zilog Z-80
RAM	32K Lithium battery-backed
ROM	128K
Hardware HDLC	Zilog 8530 SCC
Power requirements	+12 to +16 VDC @ 850 mA (1A recommended)
Input/Output Connections	
Radio interface	Two 5-pin connectors, front panel selectable
Direct FSK outputs	Normal/Reverse
Scope outputs	Mark, space
CW keying outputs	+100 VDC @ 200 mA max and –25 VDC @ 30 mA max
Terminal interface	RS-232-C 25-pin DB-25 connector
Terminal data rates	Autobaud settings at 300, 600, 1200, 2400, 4800, & 9600 bps
Printer interface	Centronics parallel printer output with optional cable
Physical	
Dimensions	11" (279mm)W x 8.25" (210mm)D x 2.5" (64mm)H
Weight	3 lbs (1.35 kg)

Advanced Modems & Filtering

This unit is designed specifically for multi-mode operation—the modems and filtering systems are proof. Its internal modem can transceive packet at rates from 45 to 1200 bps (2400 bps optional), with the option of using an external modem for higher baud rates. Also features a no-nonsense VHF/HF/CW modem with an 8-pole Chebyshev bandpass filter, followed by a limiter-discriminator with automatic threshold correction. The modem can copy shifts from 85 to 1500 Hz in two ranges.

Switchable Radio Ports

Two switchable radio ports let you connect to an HF and VHF radio, and switch via buttons on the front panel.

SIAM™

AEA's revolutionary Signal Identification & Acquisition Mode technology automatically identifies incoming signals, switches the PK-232MBX to the recognized mode, and starts displaying the data.

What is right for you?

Compare the features of our data controllers to see which piece of equipment is right for you. Do you want the top of the line data controller, with the most technically advanced components for both VHF and HF? Do you want to use the satellites? Are you a digital DXer? Or, do you just want to experiment with the new packet GPS applications? You know what you are most interested in better than anyone. Refer to the chart below to find the data controller that fits your needs. If there is any sort of feature you need that isn't listed below, give us a call, fax, or write us a letter. We will let you know what piece of AEA equipment is right for your application.

AEA Controllers at a glance

Data Controller Product Comparison Chart

	DSP-2232/1232	PK-900	DSP-232	PK-232	PK-96	PK-12
Dual simultaneous port	Y/N	Y	N	N	N	N
Multi-mode data controller	Y	Y	Y	Y	Packet Only	Packet Only
Cross mode Gateway	Y/N	Y	N	N	N	N
Cross frequency Gateway	Y/N	Y	N	N	N	N
PACTOR/AMTOR MailDrop	Y	Y	Y	Y	N/A	N/A
Packet MailDrop	Y	Y	Y	Y	Y	Y
18K (32K RAM) Mailbox	Y	Y	Y	Y	Y	Y
Mailbox expandable to 100K (128K RAM)	N	N	Y	N	Y	Y
Mailbox expandable to 242K (256K RAM)	N	N	Y	N	N	N
Runs on a 9 volt battery	N	N	N	N	N	Y
WeFax reception with false color	OPTION	OPTION	OPTION	N	N	N
B&W fax	Y	Y	N	Y	N/A	N/A
9600 bps VHF packet	Y	OPTION	Y	N	Y	N
PSK satellite modems	Y	N	Y	N	Y	N
Hardware HDLC	Y	Y	Y	Y	Y	N
Software HDLC	N	N	N	N	N	Y
DCD State Machine	N	Y	Y	N	Y	N
19,200 TBAUD	Y	Y	Y	N	Y	Y
Hardware Memory ARQ	Y	Y	Y	Y	N/A	N/A
SIAM™	Y	Y	Y	Y	N/A	N/A
Global Positioning System (GPS) firmware	N	Y	Y	Y	Y	Y
Remotely programmable GPS commands	N	Y	Y	Y	Y	Y
Remotely pollable for GPS information	N	Y	Y	Y	Y	Y
Node operation	Y	Y	Y	Y	Y	Y
Identifies TCP/IP, TheNet, & NetRom	Y	Y	Y	Y	Y	Y
TheNet X-1J mountaintop node ability	N	N	N	N	Y	N
LCD readout	Y/N	Y	N	N	N	N
LED readout	Y	N	Y	Y	Y	Y
External reset button	Y	Y	Y	N	Y	N
Separate AFSK controls	Y/N	Y	Y	N	Y	Y
Digital signal processing	Y	N	Y	N	N	N
AEA DOS control software available	Y	Y	Y	Y	Y	Y
AEA Windows control software available	Y	Y	Y	Y	Y	Y
AEA Macintosh control software available	Y	Y	Y	Y	Y	Y
AEA Commodore control software available	N	N	N	Y	N	Y
Terminal control software included	N	N	N	N	Y	Y

Y = Yes N = No OPTION= Option N/A = Not applicable to Packet-only TNCs

Advanced Electronic Applications, Inc.
P. O. Box C2160 • Lynnwood, WA 98036
Upgrade Hotline: (206) 774-1722 • Fax: (206) 775-2340

PK-96

9600/1200 bps Packet TNC

NEW GPS

Features

- *9600/1200 bps Packet Ready*
- *GPS firmware standard*
- *Remotely programmable GPS commands*
- *Stand Alone Tracking*
- *Gateway as a Node*
- *Hardware HDLC for accuracy*
- *True DCD to hear weak signals*
- *Gateway as a Node*
- *TheNet X-1J Node firmware option available*
- *Full MailDrop facility*
- *AEA's PC PakRatt Lite™ terminal control software included*
- *APRS™ software Included*
- *AEA Host mode*
- *Advanced command set*
- *Identify TCP/IP, TheNet & NetRom*
- *Separate external TX for adjustments 9600 and 1200 bps*
- *External reset button*
- *Windows™ program available*
- *Macintosh™ program available*

Rave Reviews

QST
September 1994

CQ
July 1994
November 1994
February 1995
March 1995

Amateur Radio Trader
February 1995

World Radio
February 1995

Information Super Skyway

AEA has been researching and developing wireless digital communication devices for 19 years, providing digital operators with the most reliable and powerful equipment available. The performance of the PK-96 shows AEA's commitment to quality. The PK-96 is a plug-in and go 9600/1200 bps TNC loaded with exciting features. AEA engineered the PK-96 to allow people to easily step up to 9600 bps. This was accomplished by employing proven TNC hardware, utilizing AEA's powerful command set, and including convenient features not found in other TNCs.

Versatility in Modems

The 9600/1200 bps PK-96 comes with 1200 bps AFSK tone signaling, as well as 9600 bps K9NG and G3RUH compatible direct frequency modulation, making it a truly high performance data controller. There is even a modem disconnect header for installing other modems. The PK-96 not only makes an excellent terrestrial data controller, it can also be used for high-speed data links between packet systems. In addition to the modems, the AEA engineers included separate TX pots for 1200 bps and 9600 bps on the back panel, plus an external reset to return the TNC to factory defaults.

Data Carrier Detect (DCD)

The PK-96 has a "true" DCD state machine for open squelch operation which allows communication even when your contact's signal is weak.

Hardware HDLC

The PK-96 utilizes an HDLC hardware controller for accurate protocol conversion at 9600 bps. The HDLC chip acts as a co-processor, helping the PK-96 send and receive more data in a shorter amount of time.

Full Featured MailDrop

In addition to the speed, the PK-96 comes standard with 18K (32K RAM) of battery-backed MailDrop memory which is easily expandable to 100K (128K RAM). The MailDrop controls 3rd party traffic, mail forwarding, and reverse forwarding to your local BBS. There are also commands allowing you to choose who may or may not connect to the PK-96.

AEA's PK-96 9600 and 1200 bps Packet Terminal Node Controller

Gateway as a Node

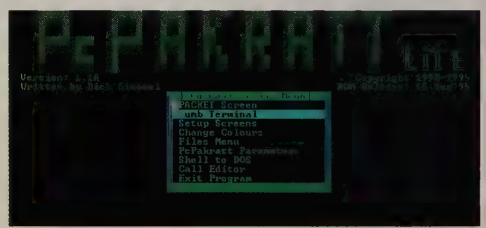
The Gateway firmware acts as a full service node. Three users can use your PK-96 as a Gateway, you can communicate with another station, someone can be leaving you a message in your mailbox, and others can digipeat through your TNC—all at once. Gateway also lets you identify TCP/IP, TheNet, and NETROM stations. As with MailDrop, you have control of which callsigns can use your Gateway. Gateway has two heard lists: one for stations heard and one for nodes heard.

Software Included

AEA's PC PakRatt Lite™ is now included with every PK-96—a $50 value. What we include is better than what other manufacturers sell. This DOS-based, menu-driven software will make operating the PK-96 easy, plus it has added features such as on-screen help, macro key facility, and much more! *(See below for screen shot.)* Also included is the GPS mapping program APRS™, developed by Bob Bruninga, W4APR.

TheNet Compatible

Now network node builders can add a 9600 bps port to their TheNet network node with no hassles. Dave Roberts, G8KBB, has written a special TheNet X-1J firmware version specifically designed for the PK-96. This special firmware is only available from AEA. To get more information about the PK-96 X-1J TheNet firmware, call AEA's Information Request Line at (800) 432-8873.



AEA's PC PakRatt Lite™ Included

GPS Firmware

The PK-96 includes GPS compatible firmware. The PK-96 is fully compatible with Bob Bruninga's Automatic Packet Reporting System (APRS™) software—a shareware version is even included with your purchase of a PK-96.

Bob Bruninga's APRS™ Software Included

Remote GPS programming features add power to your TNC. The firmware allows remote programming of GPS commands. This is very handy when the TNC is installed in a vehicle—you don't need to take the unit out to change commands. The firmware also allows remote polling, so you don't have to wait for the TNC to transmit—you can force it from a remote location. Some GPS connected receivers can even be remotely programmed via the PK-96.

The firmware also allows the TNC's time and date to be set from the GPS satellite. A radio control head button can be configured to send GPS information with the touch of a finger. Two NMEA strings (the data containing location information) can be programmed into the TNC. New GPS receivers give all the information you need in one string: latitude, longitude, course, and speed. We included the second string parsing ability in case where you own an old GPS receiver which doesn't have all the information in one string.

GPS configurations:

1) Stand Alone Tracking. This is where you connect a GPS receiver and a radio to your PK-96 in your vehicle. The position information received from the GPS receiver is beaconed via packet radio so others can track you.

The Thrill of Victory

When Brian Battles, WS10, of the ARRL called and asked if we wanted to help provide communications equipment for the 1995 Special Olympics in Connecticut, we said, "Sure!" We donated one of the legendary PK-232MBXs, one IsoLoop 10-30 HF antenna, and 15 PK-96s. The PK-96s were the real workhorses of the games. Connected to Yaesu FT-1500s, the PK-96s were used up to 12 hours a day for the two-week event. All of the equipment performed perfectly. The TNCs provided communications support for the games and relayed messages to a local BBS. The messages were then sent abroad using HF PACTOR on the PK-232MBX, so kids could communicate with their parents quickly and inexpensively. The true stars are the volunteers. Over 500 amatuer radio operators volunteered their time to the Special Olympics. This is what amatuer radio is about. People taking the time to learn about new equipment and using their talent to help out in times of need. AEA extends thanks to those amateur radio volunteers for taking the time to help.

2) Hardware Single Port Mode. This is where you use the optional AEA APRS Adapter Cable (shown below) to connect the GPS receiver and the TNC to one serial port on the computer. The application is the same as Dual Port Mode, however a computer serial port is saved. Laptop computer users will appreciate this because most only have one port. You can take this set up mobile and see on the computer screen where you are heading and where other users are heading too!

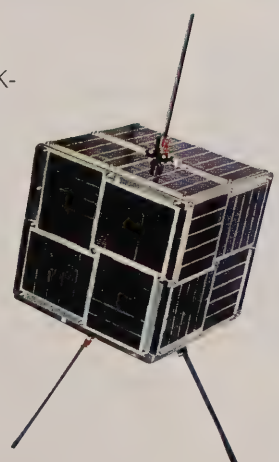
AEA's APRS Adapter Cable

3) APRS Dual Port Mode. This is where you connect the TNC and the GPS receiver to separate serial ports on your home computer. Running APRS software, you can receive position information from other users and actually see them on your computerized map.

4) ULTIMETER II™ Stand Alone Weather Station. ULTIMETER II is a home weather station kit available from PeteBros. You can set up the weather station, connect it to your TNC, and transmit weather information to others in your area. Weather nets can be established with help from friends. All the position and weather information can be seen from the APRS maps. You can really get creative with this set up. You can use the Ultimeter II temperature gauge in your home freezer and remotely access this information to see if your freezer is on, making sure meat doesn't go bad. Imagination is the limit.

Talk to Satellites

The satellites can be your worldwide BBS with the PK-96 PSK modems. Use the PACSATS to store and forward your messages. Even use satellites like a node. Take advantage of this long-distance, line-of-sight communication. The satellites are up there, use them!



Specifications for the PK-96

Demodulator	Texas Instruments TCM-3105 1200/G3RUH and K9NG compatible 9600
Modulator	Phase continuous AFSK 1200/9600 bps direct FSK
Modulator output level	5 mV-1 V RMS rear panel adjustable
Processor system	Hitachi 64180
RAM	32K , expandable to 128K
ROM	64K maximum
Hardware HDLC	Zilog Z8530
Power requirements	+12 to +16 VDC @ 400 mA
Input/Output Connections	
Radio interface	5-pin DIN connector
Terminal interface	RS-232C DB-25 connector
Terminal data rates	Autobaud settings at 300, 600, 1200,2400, 4800, 9600, and 19,200 bps
Physical	
Dimensions	6.13" (156mm)W x 7.4" (188mm)D x 1.35" (34mm)H
Weight	1.2 lbs (0.54 kg)

PK-12

1200bps VHF/UHF Packet TNC with GPS Firmware

Features

- *1200 bps, VHF/UHF Packet ready*
- *Gateway as a Node*
- *Full MailDrop facility*
- *Control software included*
- *APRS™ software included*
- *AEA Host mode*
- *Advanced command set*
- *Identify TCP/IP, TheNet & NetRom*
- *GPS firmware & commands*
- *Stand Alone Tracking*
- *APRS Adapter Cable available*
- *Energy efficient*
- *9-Volt battery operable*
- *External TX adjustment*
- *Windows™ program available*
- *Macintosh™ program available*

Specifications for the PK-12

Demodulator	Texas Instruments TCM-3105 1200
Modulator	Phase continuous AFSK
Modulator output level	5 mV-1 V RMS rear panel adjustable
Processor system	Motorola MC68HC11DOP
RAM	32K standard, expandable to 128K
ROM	64K maximum
Power requirements	+12 to +16 VDC @ less than 80 mA
Input/Output Connections	
Radio interface	5-pin DIN connector
Terminal interface	RS-232C DB-25 connector
Terminal data rates	Autobaud settings at 300, 600, 1200,2400, 4800, and 9600bps; manual 19,200bps
Physical	
Dimensions	5.78" (147mm)W x 5.275" (134mm)D x 1.35" (34mm)H
Weight	11.9 oz. (0.34 kg)

Packet Performance

NEW

The PK-12 is the successor to the popular PK-88. Optimized internal software and advanced features make the PK-12 the best value in packet radio. The PK-12 is a 1200 bps, VHF/UHF packet controller that is ideal for those looking to get started in digital communications. Yet, because of its cutting-edge features, the PK-12 has the power for operators looking for increased data throughput and to take packet radio a step further.

Full Featured MailDrop

There is 15K (32K RAM) of mailbox space standard in the PK-12 and, if that's not enough, you can increase the size to 100K (128K RAM). MailDrop controls 3rd party traffic, accepts inbound mail forwarding, and supports reverse forwarding to your local autoforwarding BBS. The internal lithium battery will hold all messages. There are even special commands which let you choose who may leave messages on your PK-12.

AEA's Extensive Host Mode

AEA's version of Host mode is preferred by programmers for its powerful application interface. Because of AEA's Host mode popularity, the PK-12 is compatible with many software programs on the market, including AEA's own PC PakRatt for Windows and the new MacRatt 3.0.

Gateway as a Node

The Gateway firmware in the PK-12 allows you and others to "node-hop" to reach other stations, which increases throughput and reduces retries compared to digipeating, (although you can still digipeat if you want). As with MailDrop, you have control of who can connect to the PK-12, for the ultimate in control. Three users can use your PK-12 as a Gateway, you can communicate with another station, someone can be leaving you a message in your mailbox, and others can digipeat through your TNC—all at once. An added feature of the Gateway firmware is identification of TheNet, TCP/IP, and NETROM stations, so you will always know who else is on the air. Gateway has two heard lists: one for all stations heard and one for all nodes heard, including the type of node.

AEA's PK-12 1200 bps Packet Terminal Node Controller

Great Commands

As with all AEA data controllers, the PK-12 has some unique commands built in. The MFILTER command suppresses all graphic and control characters except TAB, CR, and LF. There are GPS-specific commands for wireless tracking. The CFROM and DFROM commands permit selective connecting and digipeating by call signs. The MFROM and MTO commands let you select what stations you hear when monitoring. The MHeard command gives you an updated list of the most 18 most recently heard stations, what time they were heard, and what day. The UBIT and CUSTOM commands allow for PK-12 customization for non-standard applications. There is even an EXPERT disable command which limits the command set and allows beginners to get on the air immediately.

Software DCD

The PK-12's software DCD allows for open squelch operation so you can hear weak signals.

Control Software Included

AEA's PC PakRatt Lite™ (a $50 value), the packet-only, DOS-based control program is included with every PK-12 sold. This program makes controlling AEA's packet TNCs easy. PC PakRatt Lite offers macro key facility, message/command buffers for pre-programming messages, and friendly, on-screen help.

Global Positioning System

The PK-12 has special commands for GPS use, making Stand Alone Tracking possible. Stand Alone Tracking lets you put a GPS receiver, a PK-12, and a radio (no computer required!) in your vehicle and let others track you while mobile. The GPS commands are remotely programmable, so if you install the PK-12 in your car, you won't have to take it out to change parameters. The GPS firmware is compatible with GPS, Loran, and ARNAV; something no other TNC (beside AEA TNCs) can do. The PK-12 is also ULTIMETER-II™ compatible for weather nets and remote weather reporting—have local weather information when you need it!

W4APR's APRS™ software included

GPS Software Included

With every PK-12 and PK-96 is a copy of the mapping and tracking software APRS™ (Automatic Packet Reporting System). This software was developed by Bob Bruninga, W4APR, and allows packet operators to map and track other APRS users on a computerized map like the one shown above. APRS users can create maps, save traveled courses and play them back later, send short messages, plus much more!

Made for Mobility

The PK-12 is small, light, tough, and easy to use. It can run on a 9-volt battery and it even has GPS firmware—the ultimate mobile feature. Recently, the PK-12's GPS ability was even put to the test in Death Valley.

GPS Accessory

AEA's optional APRS Adapter Cable for the PK-12 was designed for Hardware Single Port Mode operation. The cable lets users running APRS devote only one COM port for the GPS receiver and the PK-12. This is a great feature since most computer users only have two COM ports, with one used by a mouse. Laptop users only have one COM port, so the Adapter Cable is a must.

The Death Valley Test

Recently, the PK-12's GPS ability was put to the test in Death Valley during the Baker-to-Vegas Challenge Cup Relay Race run which was televised on ESPN and Prime Sports. For four years, the amateur radio group in Fremont, CA and Mark Keiser, N4OGL, District Emergency Coordinator for the ARRL have volunteered their time to provide support and communication for Team Fremont (Fremont Police Department) during the run. This year, Keiser equipped eight emergency and pace vans with PK-12s, Trimble GPS receivers, and Alinco radios, then tracked the vans using APRS written by Bob Bruninga, W4APR. The systems were put through a rigorous pre-race 150 mile+ test. During the two-day, 120-mile endurance race through Death Valley, the tracking system preformed flawlessly. Proof that the PK-12 isn't just for beginners, it's for all who want a true performer.

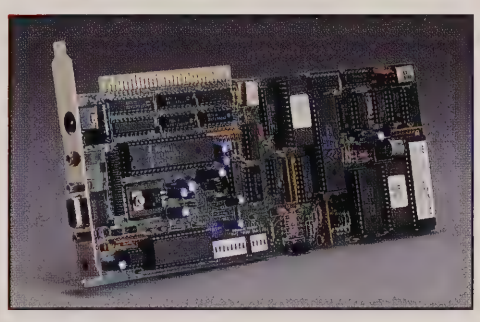
AEA's APRS Adapter Cable

PK-12 & GPS receiver using the Adapter to connect to a single computer COM port

No room for more equipment? No problem!

Specifications for the PCB-88

Modem input range	5 to 770 mV RMS
Demodulator	AMD 7910 World Chip
Modulator	Phase-continuous sinewave, AFSK generator
Modulator output level	5 to 300 mV RMS
Processor system	Zilog Z-80
RAM	Battery-backed, 32K
ROM	32K
Hardware HDLC	Zilog 8530 SCC
Input/Output Connections	
Radio interface	DB-9
Modem connection	TAPR Modem Disconnect Header
Terminal data rates	Single character auto-baud detection at 300, 600, 1200, 2400, 4800, 9600, & 19.2



Just Plug It In and Go

The PCB-88 is a full-featured, 1200 bps, IBM compatible, HF/VHF packet controller. Plug it into any 8 or 16-bit expansion slot in your XT, AT or compatible PC.

PCB-88

HF/VHF Packet Controller Computer Board

It comes with standard AEA TNC features, plus—true DCD, modem disconnect header for easy hook-up of other modems, AEA's extensive Host mode, KISS command, 18K Mailbox, full MailDrop facilities, node features, and selective connecting and digipeating. PC PakRatt-88 control software is included. The PCB-88 can get DC power direct from the computer's bus lines or, the included (U.S. models only) AC-1 12 VDC adapter can be used, so the PCB-88's MailDrop can receive messages even when the computer is turned off.

PC PakRatt for Windows Version 2.0

TNC Control Program

NEW Version

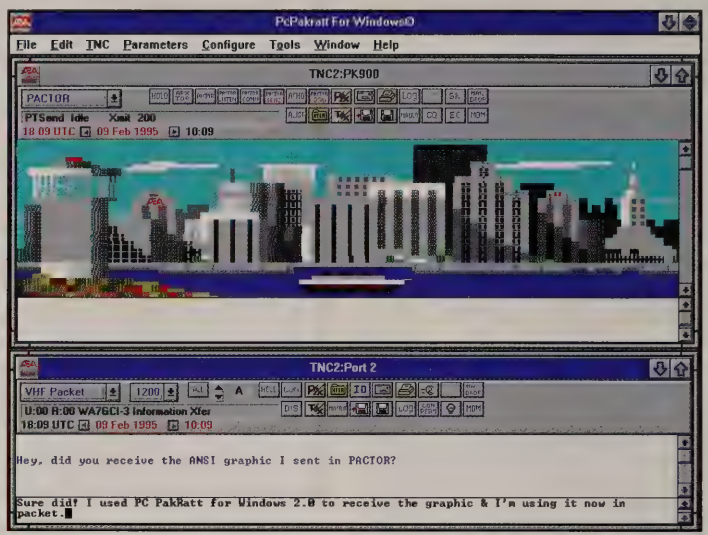
Features

- ✪ *Controls the whole family of AEA data controllers*
- ✪ *Runs under Microsoft Windows™*
- ✪ *Runs under Windows '95™, Windows 3.1, and Windows N/T*
- ✪ *Operate up to four radio ports*
- ✪ *Log Windows 2-3.0 compatibility*
- ✪ *ANSI graphics in PACTOR*
- ✪ *Controls all features of AEA TNCs*
- ✪ *Runs minimized or in background*
- ✪ *Has complete macro key facility*
- ✪ *Built-in QSO logging program*
- ✪ *On-screen help menu*
- ✪ *Separate windows for MailDrop operation and QSO logging*
- ✪ *Separate parameter screens for all the modes*

PC PakRatt for Windows 2.0

Windows of Opportunity

AEA understands that dependable control software is just as important as powerful data controllers. Software can make all the difference in whether you find your hobby a pleasure or a tedious chore. PC PakRatt for Windows 2.0 makes digital radio easy and powerful. First, it runs under the easy-to-use Microsoft Windows™ format, even under the new Windows '95. Second, this software was written by AEA for AEA data controllers—no one else's software comes close.


PcPakratt For Windows©
File Edit TNC Parameters Configure Tools Window Help
TNC2:PK900
PACTOR
PTSend Idle Xmit 200
18 09 UTC 09 Feb 1995 10:09
TNC2:Port 2
VHF Packet 1200
U:00 R:00 WA7GCI-3 Information Xfer
18:09 UTC 09 Feb 1995 10:09
Hey, did you receive the ANSI graphic I sent in PACTOR?
Sure did! I used PC PakRatt for Windows 2.0 to receive the graphic & I'm using it now in packet.

PC PakRatt for Windows 2.0 operating environment

Controls All AEA TNCs

PC PakRatt for Windows 2.0 controls the whole line of AEA data controllers. Using Windows' multi-tasking abilities, you can have dual-, tri-, or even quad-port operation with two full-featured AEA data controllers. Imagine working an AMTOR DX station through your new DSP-232, receiving information from a local packet net on your PK-900's port 2, and working PACTOR on port 1 of the PK-900—all at the same time!

Makes Life Easier

Whatever your TNC can do, PC PakRatt for Windows 2.0 makes it easier. Run HF or VHF packet (9600 bps or 1200 bps). Work PACTOR, AMTOR, RTTY (Baudot/ASCII), Morse, Signal Analysis, NAVTEX, or Dumb terminal modes.

Parameters for each TNC

There are many user-definable parameter menus for each mode and TNC which can be set up quickly and called upon when needed. All the commands you can never remember are visually displayed in the various menus and windows. Plus, help is available at any time. Because of the versatile parameter menus, beginners can learn more about the commands they are using for the first time. Advanced users will realize increased efficiency and easier control of two TNCs. PC PakRatt is a must for anyone who wants to unleash the full power of their AEA TNC.

Log Windows Compatibility

That's right—PC PakRatt for Windows 2.0 and the new 3.0 are fully compatible with Log Windows 2. This means you can have the powerful TNC control of PC PakRatt, coupled with the great database, logging, and tracking features of Log Windows.

ANSI Graphics

Sending and receiving ANSI graphics in PACTOR is now possible. Send and receive pictures like the city shown above.

Mailbox Features

Check your packet, PACTOR, and AMTOR messages using PC PakRatt's MailDrop interface. The easy-to-use MailDrop interface makes reading, writing, editing, and filing messages simple.

More Features

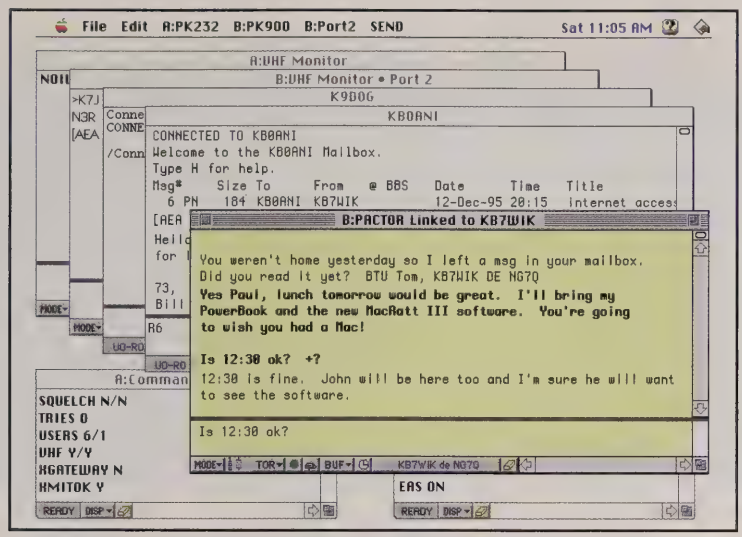
Separate windows for QSO logging, file transfers, Help, and much more. Full access to other programs and Windows utilities. Information in the transmit window can be saved to the Windows clipboard for cutting and pasting elsewhere.

Requirements

386 PC or better, Windows 3.1 or better, 4MB free hard disk space, and 2 MB RAM (4 MB recommended), and an AEA data controller with August 1991 firmware or better.

The Power of Ratt in a Mac

This is our newest data controller program—MacRatt III. We've improved upon our original design to take advantage of the power of the newest Macintosh systems. If you have an AEA data controller and a Macintosh computer, this is the control program for you. MacRatt III is the easiest and most powerful data controller program written for Macintosh computers—you will be impressed.


File Edit A:PK232 B:PK900 B:Port2 SEND
Sat 11:05 AM
A:UHF Monitor
B:UHF Monitor • Port 2
K9DOG
KB0ANI
CONNECTED TO KB0ANI
Welcome to the KB0ANI Mailbox.
Type H for help.
Msg# Size To From @ BBS Date Time Title
6 PN 184 KB0ANI KB7WIK 12-Dec-95 20:15 internet acces
B:PACTOR Linked to KB7WIK
You weren't home yesterday so I left a msg in your mailbox.
Did you read it yet? BTU Tom, KB7WIK DE NG7Q
Yes Paul, lunch tomorrow would be great. I'll bring my PowerBook and the new MacRatt III software. You're going to wish you had a Mac!
Is 12:30 ok? +?
12:30 is fine. John will be here too and I'm sure he will want to see the software.
Is 12:30 ok?
SQUELCH N/N
TRIES 0
USERS 6/1
UHF Y/Y
XGATEWAY N
XMITOK Y
EAS ON

MacRatt III, the new terminal control program for all AEA data controllers

Controls All AEA TNCs

All AEA data controllers with 1991 firmware or better can be controlled with MacRatt III. This includes the PCB-88, PK-88, PK-12, PK-96, PK-232MBX, the new DSP-232, PK-900, DSP-1232, and the DSP-2232. You can even control two AEA data controllers simultaneously. With two dual port data controllers, such as the PK-900 and DSP-2232, you can have quad-port radio operation!

MailBox

Handling your packet, AMTOR, and/or PACTOR mail has never been easier—you can easily save messages to disk just by clicking and dragging.

You're in Command

Accessing and changing commands is simple. Each mode has its own pull-down menu which offers access to a plethora of commands that can be set for that specific mode. Modes supported: HF/VHF/UHF packet, PACTOR, AMTOR, RTTY (Baudot/ASCII), and NAVTEX.

Other Features

Other features you are sure to appreciate are the pull-down help menus that not only helps you with the software program, but how to run the data controllers. You will have access to other Macintosh programs and be able to transfer binary file.

MacRatt III

Terminal control program for newer Macintosh computers

NEW Version

Features

- ***Controls the whole family of AEA data controllers***
- ***Runs under System 6.05-7.0-7.5***
- ***Controls all features of AEA TNCs***
- ***Full Mailbox facilities***
- ***Extensive help files***
- ***Allows for controlling two AEA data controllers at once***
- ***Runs minimized or in the background***
- ***Limited one year warranty***

Requirements: Macintosh computer with System 6.05 or newer, 4 MB disk space, 4 MB RAM, an AEA data controller with August 1991 firmware or better.

Pakratt Software Selection Table ● = Yes ○ = No

	PC PAKRATT for Windows 2.0	PC PAKRATT II	PCPakRatt Lite	COM PAKRATT	MacRATT III
Which controllers	All*	PK-12, 96, 232MBX , PK/PCB-88	PK-96/12	PK-88, 12, 96/232MBX	All*
Computer type	PC Compatible	PC Compatible	PC Compatible	Commodore C-64	Macintosh
PACTOR	●**	●**	○	○	●
AMTOR	●	●	○	●	●
RTTY (ASCII/Baudot)	●	●	○	●	●
Packet	●	●	●	●	●
QSO Logging	●	●	○	○	○
Controls multiple TNCs at once	●	○	○	○	●
Fax	○	●***	○	●	○
Binary file transfer	●	●	●	○	●
Disk & printer access	●	●	●	●	●
Help	●	●	●	○	●

* "All" denotes PK-12, PK-96, PK-88, PCB-88, PK-232MBX, DSP-232, PK-900, DSP-1232, and DSP-2232.
** Requires AEA multi-mode controller with PACTOR.
*** Includes DOS-based PK-FAX, B&W fax receive & transmit program. Works with multi-mode controllers only.

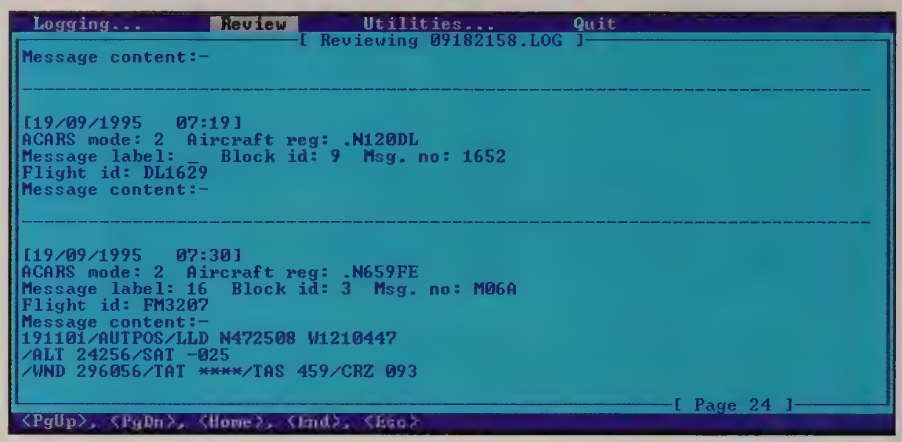
AEA ACARS

See airline flight information right on your computer screen!

Air Traffic Controller

NEW

Airline flight, cargo, fuel, and many other pieces of information will fly across your screen. AEA ACARS is a package containing a small demodulator and DOS computer software that lets you receive the digital communications taking place between ground stations and aircraft. All you need is the AEA ACARS package, a VHF receiver or scanner capable of covering 129-132 MHz AM, and an IBM-compatible computer.



This is the sort of information you will see with AEA ACARS

Features

- ✪ *Lets you see digital airline communication on your computer*
- ✪ *DOS software and demodulator included in full ACARS package*
- ✪ *Same demodulator as AEA FAX III — FAX III owners can buy the software only version of ACARS at a reduced price!*
- ✪ *DSP-232 and PK-900 owners have the demodulator built into their TNCs — all you need is the special software-only version, AEA ACARS 900 for your DSP-232 or PK-900*
- ✪ *Use with your existing VHF receiver or scanner*
- ✪ *Use with your existing IBM-compatible computer*
- ✪ *Detailed manual gets you receiving messages in no time*
- ✪ *Software supports computer COM ports 1-4*
- ✪ *Limited One Year Warranty*

Simply plug-in this demodulator, load the software, and you are ready to receive ACARS messages.

What is ACARS?

ACARS is an acronym for Aircraft Communications Addressing and Reporting System. Until a decade ago, almost all radio links between the ground and commercial aircraft used voice communications.The expansion in air traffic generated the need for a faster and more efficient system for handling communications. The result was ACARS, a digital data link system designed to utilize existing ground station and aircraft radio equipment, and enhance air-ground-air communications. AEA ACARS gives you the ability to monitor this communication.

The Messages

The ACARS frequencies carry a lot of traffic between aircraft and ground stations. The types of information in the ACARS transmissions varies widely. It can range from simple arrival/departure reports, to lengthy aircraft computer downlinks of navigation, engine, and performance data. Messages also include: Weather observations, flight plans, navigation positions, aircraft and engine performance data, arrival/departure/delay reports, equipment malfunction reports, crew reports, connecting gate lists

The Range

As aircraft fly, they continuously transmit information and AEA ACARS gives you the ability to monitor this air-to-ground communication. If you are near a major airport, you can even monitor both air-to-ground and ground-to-air communications.

ACARS Signals

For ham radio operators and short-wave listeners, ACARS can be regarded as a commercial type of packet radio communication. The ACARS signal uses a 2400 bps message data bit stream to differentially AM modulate the transmitter carrier using 1200 and 2400 Hz tones. AM modulation is used, consistent with the historical use of AM voice mode on the aircraft bands since the early days of radio.

AEA FAX III Owners

The great thing about the way we designed AEA ACARS is that the demodulator for AEA ACARS and AEA FAX III are identical. If you already own AEA FAX III and you want AEA ACARS, all you need to do is get the software only version of ACARS at a reduced cost—just load the software on your computer and use your existing AEA FAX III demodulator!

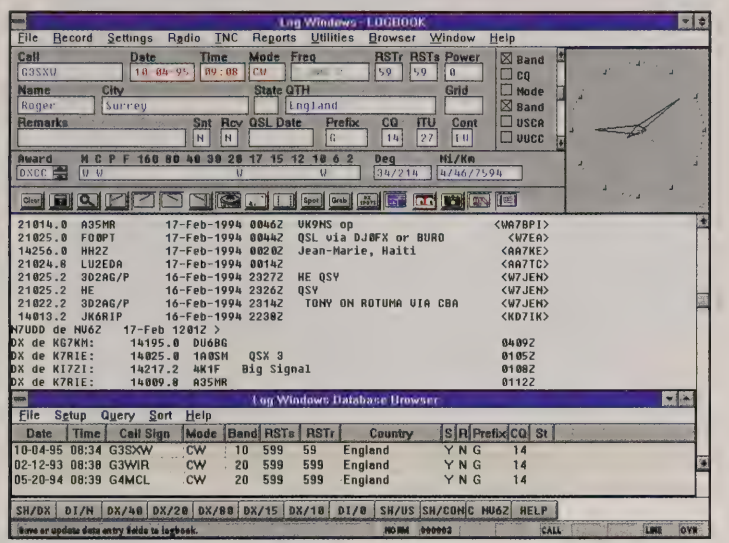
If you don't have AEA FAX III, get the complete AEA ACARS package which includes both the demodulator and the software. If you decide you want to receive weather fax images—by the software only version of AEA FAX III.

DSP-232 & PK-900 Owners

If you own either the new AEA DSP-232 or PK-900, you have the demodulator hardware already built into your data controllers. If you want to receive ACARS transmissions, get AEA ACARS 900—the software only version custom-designed to run with your DSP-232 or PK-900. If you want AEA FAX III—same deal, get AEA FAX III 900.

The Paperless Logbook

Logging, rig control, and DX cluster monitoring with award tracking and reporting, it's all here and much more. This program was created to automatically display DX spots and allow users to move to the designated frequency quickly, log the contact, then save the information in a log. Immediately enter contacts and update your progress toward awards with AEA's new Log Windows 3.0. Compatible with Windows '95™ as well as Windows 3.1™, and Windows N/T.


Log Windows - LOGBOOK
File Record Settings Radio TNC Reports Utilities Browser Window Help
Log Windows Database Browser
File Setup Query Sort Help

Log Windows 3.0 operating environment

PakRatt Compatibility

This new version of Log Windows is now compatible with AEA's PC PakRatt for Windows version 2.0. Users can have the superior TNC control of PC PakRatt for Windows 2.0, coupled with the powerful logging and tracking of Log Windows.

Rotor Control

Antennas can be turned to the short path, long path, or in an arbitrary direction, with the click of a mouse.

Database Browser

A new Database Browser lets you sort and print logs by any criteria. Users can also query on-line callbook databases such as AmSoft, Flying Horse, SAM, QRZ, or HAMCall for a callsign at any time. You can also use the internal QSL manager or an external one, such W6GO/K6HHD GOLIST.

DX Spots

Log Windows 3.0 can verbalize DX spots with a voice-synthesized DX alarm. A filter can be turned on so Log Windows will only display and sound alarms for DX that are needed, preventing unwanted spots from distracting you. You can display the 30 most recent DX spots, choose one to enter in the display, and grab it. This automatically sets the transceiver frequency and mode, and prepares the logbook to record the contact. Log Windows 3.0 doesn't even require an AEA TNC.

Move to Log Windows

The stand-alone LW Import program (included) allows all these logs to be imported into Log Windows 3.0: CT, DXLog, Log Master, Easy DX, Hyperlog, DX Base, N6RJ 2nd Op, Log View, DX Desktop, PC PakRatt, and any ASCII log.

Award Types Supported

Logging and award tracking are supported for: ARRL DXCC, WAS, VUCC, and *CQ Magazine's* CQ Zone and US-CA awards.

Report Types

With Log Windows 3.0 you can generate all these reports: Summary, Full report, Countries/states/zones worked, Countries/states/zones needed, QSLs sent, QSLs needed, Award tag types (not tagged/duplicates).

Other Features

Other new features include: a full time status bar, data entry fields can be passed to a TNC via User Buttons, you can enter operator notes for each contact, control your radio's basic functions, laser or tractor fed label printing, browser can replace to TNC window if you are not a TNC user, plus much more!

Requirements

An IBM compatible computer running Windows 3.1 or better, 4MB of RAM, and 4MB of free hard disk space.

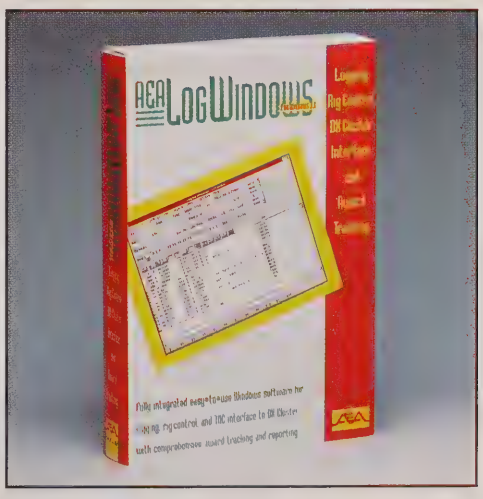
Log Windows Version 3.0

Logging & Award Tracking Program

NEW Version

Features

- ✪ *Logging, rig control, antenna rotor control, and data controller interface all in one package!*
- ✪ *Runs under Microsoft Windows™*
- ✪ *PC PakRatt for Windows 2.0 compatibility for ultimate control*
- ✪ *Query on-line callbook databases*
- ✪ *Imports most other databases*
- ✪ *Use the Database Browser to search your logs by almost any criteria you can imagine*
- ✪ *Voice synthesized DX spot alert*
- ✪ *Packet Cluster Interface supports all AEA TNCs, plus all others too!*
- ✪ *Print logbooks by prefix or chronological order*
- ✪ *Print QSO labels (laser/tractor)*
- ✪ *Generates many report types*
- ✪ *Supports all popular awards*
- ✪ *On-screen help*
- ✪ *Limited one year warranty*



Log Windows 3.0

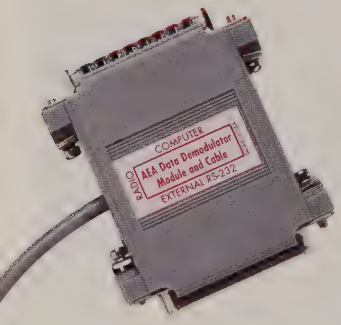
AEA FAX III

WeFax CW, RTTY, & NAVTEX Reception

NEW Version

Features

- *256 WeFax coloring ability*
- *Receives WeFax in 16 shades of gray*
- *Receives WeFax, NAVTEX, RTTY, and Morse code*
- *Includes a Fax Station Database*
- *Can be configured to automatically receive images while you are away*
- *On-screen tuning indicator helps you keep the signal coming in strong*
- *Slide Show mode for viewing a series of your favorite images*
- *Images can be exported to .GIF or .PCX files*
- *Manipulate images after they are received*
- *Demodulator is the same as the one used for AEA ACARS; software only AEA ACARS available*
- *Prints images on popular printers; color on HP & Epson color printers*
- *Limited One Year Warranty*



Simply plug-in this demodulator, load the software, and you are ready to receive highly detailed WeFax images.

Why Wait for the Weather?

AEA FAX III is a package containing a small demodulator and DOS computer software that lets you receive gray scale HF weather fax images. It also decodes CW, RTTY, and NAVTEX messages. All you need is a SSB receiver and an IBM-compatible computer. Once you buy FAX III, you can order the software-only version of ACARS—the demodulator is the same.

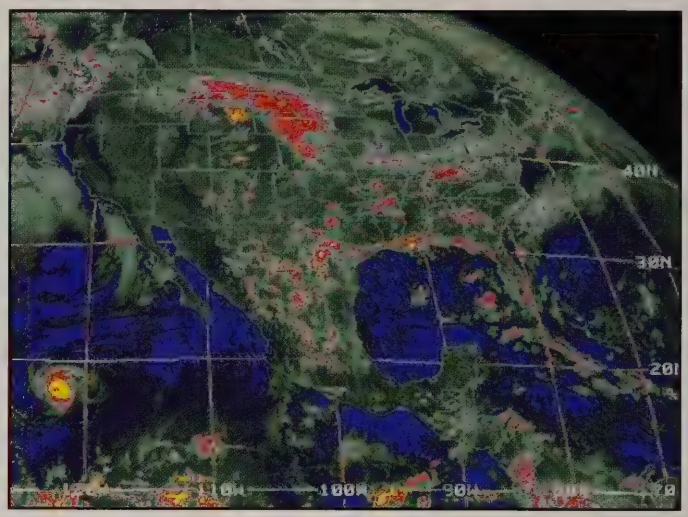


Image received and colorized using AEA FAX III

Colorize Your Weather

Receive WeFax images in 16 shades of gray, then colorize with the 256 color palette. Colorizing allows you to decipher more information from received images. You can then export the grayscale or color images to .PCX or .GIF graphic file extension for use in other programs.

Fax Station Database

A Fax Station Database is included with AEA FAX III. You can keep a log of stations heard and update the database whenever you want. Once a station is in the database, you can quickly and easily search the entire database by names, country, or time.

Automatic Reception

AEA FAX III enables a computer to drive computer controllable receivers, allowing frequency switching of the receiver for unattended capture of complex schedules. This feature coupled with the fax station database makes unattended captures a snap. Just choose stations from the database, put them in a schedule, and go do something else. When you come back, AEA FAX III will have captured the transmissions you need.

Upgrades Available

If you have AEA FAX or AEA FAX II, you can fully upgrade to AEA FAX III, see page 1. Here's a bonus, the demodulator used for ACARS and AEA FAX III are the same. So, once you buy AEA FAX III, you can just just order the software only version of ACARS.

On-Screen Tuning Indicator

A tuning indicator is present at all times while receiving an image. You can adjust the tuning of the signal and immediately see the results. You don't have to stop receiving an image to adjust tuning as with other WeFax receiving programs.

Manipulate Images

Once an image is received you can manipulate it right in AEA FAX III. You can zoom, invert, flip, rotate, mirror, scroll, and crop images. Plus you can colorize images and export them as graphic files!

Easy Installation

The demodulator simply plugs into the serial port on your computer—no TNC is required. The circuitry for demodulation is housed in the included demodulator. A shielded audio cable plugs into a COM port on your computer and into your HF receiver's external speaker output. The connector has a female DB-25 connector on one side to interface with your computer's COM 1-4 port. On the other side is a male DB-25 connector so you can "daisy-chain" and avoid tying up a COM port.

Requirements

Requires an IBM-compatible computer and a general coverage HF SSB receiver. VGA monitor required for optimum gray scale and colorized fax display. Works with EGA and CGA monitors, but with reduced grays and colors displayed. No Amateur Radio License is needed. No TNC is needed.

Getting You All Keyed Up!

KK-1

The keyboard keyer that puts the world at your fingertips

The KK-1 turns any standard PC compatible 101-key keyboard into an easy-to-use, feature packed Morse machine. No computer is required; the keyer works with the computer keyboard alone. If you have a keyboard connected to your PC, the KK-1 will share it with your computer (cable provided). One keystroke switches the keyboard between the keyer and your computer.

Total Control

The KK-1's features take full advantage of your keyboard's layout. For example, the separate numeric and cursor-control keypads are used for accessing the majority of functions and for parameter selection. The twelve function keys select the message buffers with a single keystroke.

Controls and Display

The speed knob lets you control speed from the keyer. You can also make changes by using the keyboard. Mode indicators include: Pause, Load, Send, Tune, On-Line, plus others. There are also four, 7-segment LEDs in the parameter display for checking all settings at a glance.

Great Features

There are twelve memories which allow you to store six times as many messages as other keyers. The dynamically allocated, battery-backed memory holds over 9,700 characters—48 times more than other keyers. There is a separate short-term memory which lets you repeat your last exchange with a single keystroke, if QRM wiped you out. The paddle reverse function allows easy switch-over for left-handers. Send Farnsworth code on the air—set the average speed slower than character formation speed for more relaxed QSOs. The KK-1 defeats the keyboard's auto-repeat feature to prevent CCCCQQQQ and the like. And the 19 weight settings compensate for transmitter keying characteristics and give you a distinctive 'fist.'

KKCOM software

KKCOM is an optional software program and serial interface cable which connect the KK-1 to a PC.

While other Keyers don't let you see what you're typing, KKCOM lets you create and edit buffer contents right on the computer screen. Keyer parameters like speed, sidetone pitch, serial number, and paddle sense can also be displayed and changed. You can even save to disk, and reload later, the entire contents of the KK-1, including messages and settings.

Customize the KK-1's battery-backed message buffers! Have different buffer banks for field day, contesting, or for everyday use. Create and save up to twelve buffers. Message buffers will stay there until you decide to change them again.

Remote Base Station Control

HamLink
RadioLink

Base station power from your handheld

No longer are you tied to your shack when you want the power of a base station. Control your ICOM, Kenwood, or Yaesu radio using your telephone, handheld, or mobile radio. Using your radio's computer port, you can operate SSB, FM, AM, and even CW anywhere you go.

HamLink & RadioLink

Both units allow you to change bands, frequency, and modes. Just in case you lose track of your frequency or mode, we've included a voice synthesizer to remind you. There is also password protection, so others won't have access to your equipment.

The HamLink Model

HamLink controls your ham station using a touch tone telephone. Change bands and frequency, tune up or down, switch modes (AM/SSB/FM/CW), scan, run split VFO, or virtually any other radio feature from anywhere you can find a touch-tone phone.

HamLink hooks into your existing telephone line so there is no need for a second phone line to be installed. HamLink functions perfectly, even if you have an answering machine connected to the same phone line.

The RadioLink Model

Similar to HamLink, RadioLink lets you use the touch-tone keypad on your handheld or mobile radio to change bands, frequency, or mode. RadioLink can go between your HF/VHF/UHF transceiver and a repeater or a 220 MHz or UHF full duplex link.

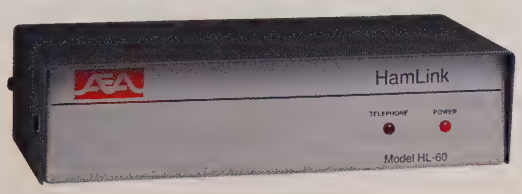
RadioLink also interfaces with equipment that does not have a computer port for commercial use. In addition, RadioLink switches to a local mode so the user does not have to plug and unplug a local mic, key, and speaker.

Accessory Outputs

HamLink and RadioLink both have accessory outputs for controlling external relays (actual relays are not provided). The accessory outputs can be used for controlling your antennas, turning on/off lights, coffee pots, and anything else you can imagine.

OpLink

This optional CW adapter connects to your remote telephone or radio. You then plug in your favorite key or keyer and start transmitting high speed CW.



DM-1

AEA's new VHF/UHF Deviation Meter for voice, data, + more

Specifications for the DM-1

Frequencies	147.9, 222.1, 444.1 MHz
Deviation ranges	±1 kHz, ±5 kHz full scale
Readout	10 segment LED bar and provisions for an external meter
Deviation resolution	50 Hz on 1 kHz range; 250 Hz on 5 kHz range (greater with external meter)
Accuracy	±5% of full scale
Audio freq response	±2 dB from 10 Hz to 300 Hz (1 kHz range) ±3 dB from 10 Hz to 5000 Hz (5 kHz range)
Sensitivity (WHIP input)	< 100 mV
Operating power (through)	1 Watt - 100 Watts
SWR	<1.3 : 1
Audio de-emphasis	750 µs
Battery	Standard 9 Volt alkaline
Battery current	60 mA typical
Physical	
Dimensions	6.13" W x 4.75" D x 1.38" H
Weight	1 lb

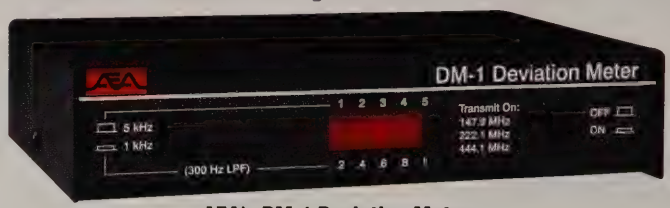
Also Available:

DM-1 EU Same features and functions, but for the European frequencies: 145.1, 217.6, & 435.1 MHz

Check Your Deviation

NEW

A deviation meter is an essential tool for operating at 9600 bps. AEA's new DM-1 is a deviation meter designed for measuring the deviation of FM transmitters operating in the 144, 220, or 440 MHz amateur bands. Great for measuring voice, data, DTMF, and sub-audible deviation.



AEA's DM-1 Deviation Meter

Optimum Digital Throughput

For maximum throughput, it's important that your transmitter's deviation be correctly set. If the deviation is set too low, other stations will not hear your signal; if set too high, your over-deviated signals will interfere with amateurs operating on nearby frequencies.

9600 bps Packet

The DM-1 allows you to correctly set the deviation for 9600 bps Packet operation, which is nearly impossible to do by ear. Packet users that are used to the 'braaap' sound of the 1200 bps packet bursts will only hear 'white' noise when using 9600 bps. The DM-1 allows users to correctly set deviation—eliminating excessive retries, increasing data throughput, and increasing channel efficiency.

CTCSS Tone Checking

The DM-1 can also measure the CTCSS tones. The 1kHz. range of the meter is for this purpose.

Feature Packed

The DM-1's tuning is crystal controlled, which provides stable measurement and eliminates the need for manual tuning. Two deviation ranges allow sufficient resolution for accurate measurement of voice, data, DTMF, and sub-audible deviation. Handhelds, mobiles, and base stations can be checked for correct deviation.

Display and Outputs

The DM-1 comes with a ten segment LED bar display and includes an output for external digital or analog meters, which provide increased resolution. Also included is a low-level, de-emphasized audio output for monitoring audio quality through an external amplifier.

Battery Powered

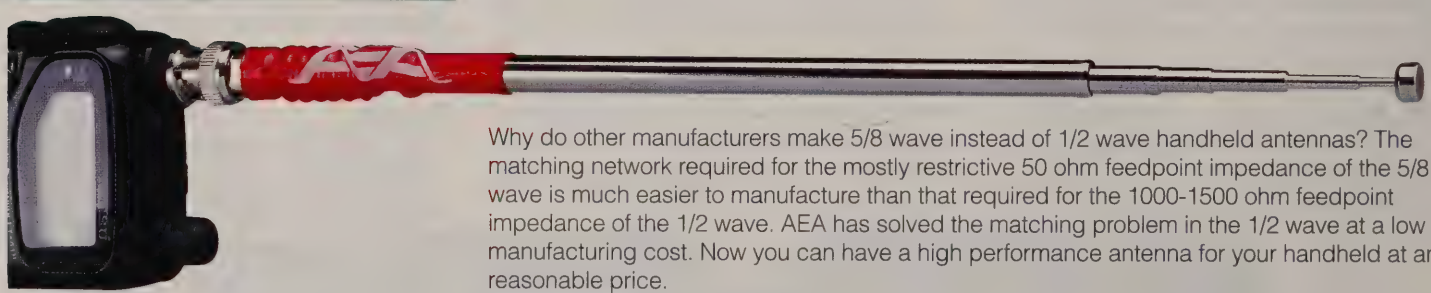
Power is supplied by one standard 9 volt alkaline battery (not included). When battery voltage drops below 5.5 volts, the DM-1 is automatically disabled to prevent erroneous readings.

Hot Rods

High Performance for your Handheld

Outperforms 5/8 Antennas

AEA's Hot Rod antennas are end-fed halfwave dipoles which are shorter, lighter, and easier on a handheld radio than a 5/8 wave. They give typically 10 dB more gain than the popular "rubber duck" helical quarter wave antennas. They can also handle over 25 watts of power, making them ideal portable base or mobile antennas. Hot Rod antennas may be used collapsed where they perform electrically like helical quarter-wave flexible antennas, with performance roughly equivalent to the "rubber duck."



Why do other manufacturers make 5/8 wave instead of 1/2 wave handheld antennas? The matching network required for the mostly restrictive 50 ohm feedpoint impedance of the 5/8 wave is much easier to manufacture than that required for the 1000-1500 ohm feedpoint impedance of the 1/2 wave. AEA has solved the matching problem in the 1/2 wave at a low manufacturing cost. Now you can have a high performance antenna for your handheld at an reasonable price.

Three models to choose from:

HR-1 half-wave 2M HR-2 half-wave 220 MHz

HR-3 half-wave 150 MHz

Maximum Gain Antennas

Over 70,000 AEA IsoPoles have been sold to amateur radio operators around the world. The IsoPole is available in 144, 220, or 440 MHz versions, each yielding the maximum gain attainable for their respective lengths as well as zero-degree angle of radiation. The IsoPoles have the broadest frequency coverage of any comparable VHF base station antenna. IsoPoles give you unmatched performance in the VHF/UHF bands.

IsoPole™

High Performance for VHF/UHF Base Stations

Innovative Design

The IsoPole is a gain-type omnidirectional vertical antenna with excellent decoupling, capable of accepting full legal power, impedance matched at the factory for complete coverage of respective amateur bands, with input coaxial connectors and matching section protected from the weather, all at an attractively low price. The mechanical advantages, combined with certain electrical properties of non-cylindrical sleeves, have led AEA to seek patent protection for this design.

Withstands Harsh Conditions

The insulating material offers excellent strength and dielectric properties, plus long-term ultraviolet resistance. The mounting hardware is stainless steel and the decoupling cone and radiating elements are made of corrosion-resistant aluminum alloys.

Superior Decoupling

The IsoPole is designed so that the mounting structure and coax will not become inadvertent parts of the antenna. This is called decoupling and many antennas on the market today fail to decouple, thus ruining the radiation pattern of those antennas and making them as ineffective as a dummy load. The IsoPole's superior decoupling results in simple tuning and a significant reduction in TVI potential. There is less feedline pick up of noise with the IsoPole than any equivalent antenna.

Typical power pattern for the Iso-144, Iso-220, and Iso-440.

Greater Efficiency

Cones offer greater efficiency over radials which radiate in the horizontal plane. Additionally, the IsoPole offers broad frequency coverage. There is no loss of power output from one end of the band to the other. Typical SWR of 1.4:1 or better across the entire band. VHF versions include a 50 ohm SO-239 connector recessed within the base sleeve for full weather protection.

Maximum Power

The impedance matching network is designed for maximum legal power. It compensates for the impedance introduced by the SO-239 connector used in VHF models.

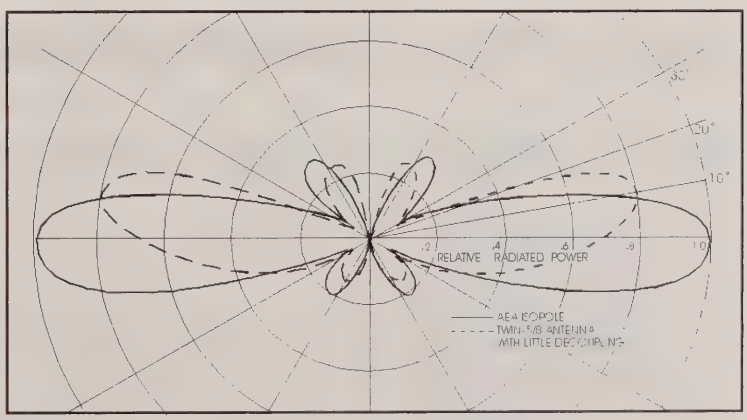
Simple Installation

The IsoPole antennas are all impedance matched in the factory so no field tuning is required. Instead of the typical 25-40 screws, the IsoPole has no more than 5 stainless steel screws to fasten, thereby significantly decreasing the time necessary for assembly and reducing the chance for errors.

Specifications for the IsoPole

Model*:	Iso-144	Iso-220	Iso-440
Frequency coverage	135-160 MHz	210-230 MHz	415-465 MHz
Impedance	50 ohms	50 ohms	50 ohms
Nominal power rating	1.0 KW	1.0 KW	1.0 KW
2.1 VSWR bandwidth	10 MHz @ 146 MHz	15 MHz @ 220 MHz	22 MHz @ 435 MHz
Length	125.5" (3.2m)	79.25" (2m)	46" (1.2m)
Min. mast length**	8' (2.4m)	5.25' (1.6m)	6' (50mm)
Coax connector	SO-239	SO-239	Type N
Gain (on horizon)	3 dBd	3 dBd	3 dBd

*Aircraft band and commercial versions also available **Mast not included.



Typical power pattern for the Iso-144, Iso-220, and Iso-440 compared to a twin 5/8 antenna with little decoupling.

IsoLoop

AEA's IsoLoop 10-30 gives you high-Q in tight places

High Performance Antenna

This high efficiency antenna is perfect for amateurs living in areas with antenna restrictions! The IsoLoop antenna exhibits a significant engineering breakthrough with its high performance, low profile design. It covers 10-30 MHz continuously at 150 watts and makes it possible for hams to enjoy their hobby in what may seem to be an impossible location.

Features

- ***10-30 MHz HF loop antenna***
- ***High efficiency***
- ***Large, 10,000 Volt capacitor***
- ***Stepper motor control of capacitor***
- ***Separate DC and coax feedlines to antenna***
- ***Direct link coupled feedline***
- ***All aluminum construction is iridited to fight corrosion***
- ***Flat loop design provides more outer surface for radiating***
- ***Flexible loop allows access into tight spaces, like attics***
- ***Stainless steel hardware used throughout***
- ***Injection molded casing reduces warping & swelling in extreme conditions***
- ***LC-2 manual tuner is included***
- ***Optional IT-1 Automatic Tuner available***
- ***Limited one year warranty***

Mount It However You Want

The antenna is omnidirectional and requires no rotor or station antenna tuner. It can be mounted horizontally or vertically. Horizontal mounting is preferred for best DX performance due to the lower angle of radiation at low heights. It also allows for easy attic installation. Mounting it vertically provides a null in a specified direction. The flexible, iridited aluminum loop band has a very low radiation resistance—ranging from 0.2 to 0.4 ohms!

Stealth, yet powerful

High Performance

Efficiency ranges from 96% on 10 meters to 72% on 20 meters. The custom designed, split-stator capacitor has no rotating contacts and is rated at 10,000 volts. The large capacitor can withstand higher voltages, therefore, the antenna can be higher Q and more efficient than other loops on the market.

Compact Design

Operate your favorite band from areas with restrictive zoning ordinances! And the IsoLoop's loop is flexible, so it can squeeze through attic openings and other tight spaces where other loop antennas can't.

The Capacitor

The large capacitor is rotated by a low-noise precision stepper motor, so exact tuning is a breeze. Because of the stepper motor, the IsoLoop realizes less backlash and better tuning without noise.

Portable

The IsoLoop is compact, round, measures only 35" in diameter and weighs only 14 pounds. The actual loop is flexible so it can squeeze through tight openings such as an attic door—something other loops can't do. Because it comes fully assembled and operates on 13.8 VDC, it is the ideal antenna for Field Day and DX peditioning. Use it on a boat, a mobile home; take it wherever you wish!

Comes with. . .

It comes with an AC-1 power supply (U.S. model only), LC-2 tuner with frequency indicator, an operating manual, and a 50-foot (15.25 M) shielded control cable. Extension cables are available. The mast and coax are not included, and for good reason. You will want to get the right type of mast for your application; a mast for an IsoLoop used on a boat may be a different size and shape than that for use in an attic.

Specifications for the IsoLoop 10-30

Frequency coverage	10 to 30 MHz, continuous	
Nominal impedance	50 ohms	
Power rating	150 watts	
VSWR	Less than 1.5:1 (no nearby obstructions)	
Temperature	Operating Storage	0 to 150°F (-17 to 65°C) -50 to 200°F (-45 to 93°C)
Dimensions	35" (89cm) diameter circle	
Max. mast diameter	2" (51mm)	
Weight	Actual: 14 lbs (6.35 kg)	Shipping: 25 lbs (11.34 kg)
Coax connector	UHF (SO-239)	
Gain over dipole	Depends on elevation	

Optional LC-2 shielded control cable with connectors available in 50' (15.25 M) and 100' (30.5 M) lengths.

Designed Right

The high-Q design results in a narrow bandwidth which suppresses harmonics from your transmitter, reducing TVI problems. It also attenuates out-of-band signals, helping prevent receiver overload.

Built Right

All-welded construction means no mechanical joints, so the possibility of corrosion is kept to a minimum. We also used all stainless steel construction throughout for even better corrosion protection. The plastic housing is injection molded which reduces swelling and warping in extreme conditions. The IsoLoop is isolated from the feedline, resulting in an undistorted radiation pattern and less stray RF in the ham shack.

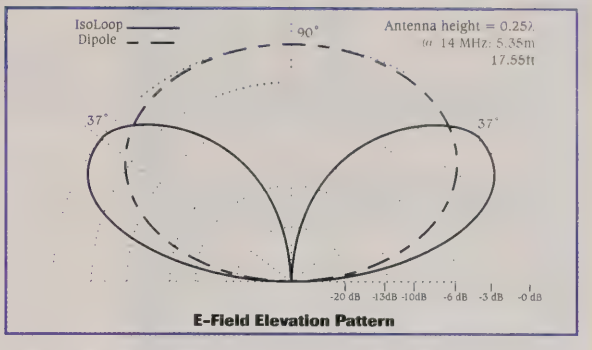
Go Anywhere

WARNING:
Don't be fooled by cheaper imitations. The theory behind loop antennas is proven, however, cut-rate versions of loop antennas provide poor performance and don't withstand the elements of time. AEA designed the IsoLoop with quality parts, materials, and craftsmanship to provide you with years of high performance communication.

At 17.55 Feet. . .

At low elevations, the IsoLoop clearly outperforms the half-wave dipole at the same height. While the dipole's maximum radiation is at 90 degrees, the IsoLoop radiates at low angles, perfect for DX. And at this height (17.55 feet), there's no need for a tower.

The IsoLoop is omnidirectional, so you can get out in all directions, and covers 10-30 MHz continuously.

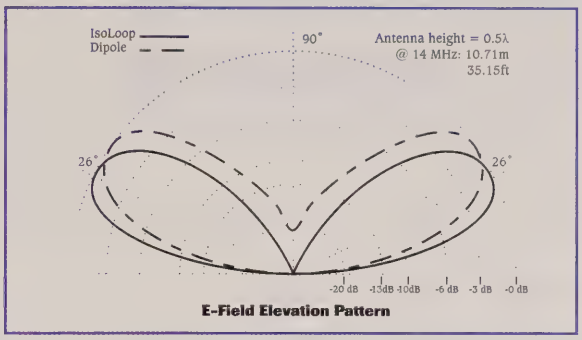


E-Field Elevation Pattern

At 35.15 Feet. . .

Even at greater heights, the IsoLoop still compares favorably with the much bigger half-wave dipole. Notice that the IsoLoop's radiation angle is still lower than the dipole's. Plus, the simple construction of the IsoLoop makes it easier to install and much easier to maintain.

With your coax and mast, the IsoLoop installs in seconds. In addition, the IsoLoop needs no ground plane, ground radials, rotors, or antenna tuners.



E-Field Elevation Pattern

There is nothing mysterious or magical about the IsoLoop 10-30 HF Antenna. Small loop antennas have been around since Heinrich Hertz's first experiments with radio in 1886. What's revolutionary is that someone has finally put all the pieces together in one efficient package. Lack of efficiency is the major reason why the radio world has never seen a successful small loop antenna for the HF bands. The efficiency of the IsoLoop on 20m is 72%, rising to 96% on 10m. For comparison, a typical 20m mobile antenna has efficiencies ranging from 2% to 10%.

Lossless Impedance Matching

The very low impedance of the radiating loop (typically 0.06 ohm) is matched to 50 ohms using the technique of mutually coupled air core inductors. This technique is essentially lossless and the shielded primary coupling loop also provides a balun action to isolate the main loop from the feedline.

10,000 Volt Variable Capacitor

This heavy duty, custom designed capacitor is the heart of the tunable IsoLoop. All connections are welded and the split stator design eliminates lossy sliding connections. The key to maintaining radiation efficiency in small antennas is to minimize all possible losses.

Main Loop

This 35" diameter band of iridited aluminum is welded to the tuning capacitor to further reduce losses. Electrically, the main loop is an inductor that radiates because of its large diameter. This radiating inductor is tuned with the capacitor to form a very high Q resonant circuit. The high Q has the added benefit of suppressing both transmitted and received off-frequency signals.

IsoLoop 10-30 with cover open.

Precision Stepper Motor

Four control lines from the LC-2 Loop controller determine which way, and how fast the stepper motor rotates. With its high resolution and a 30:1 gear reduction, this system provides incredible tuning precision, and unlike a DC motor, generates no RF noise.

IT-1 IsoTuner

With the IT-1 IsoTuner, tuning the IsoLoop has just become easier! This is not a station antenna tuner, it tunes the IsoLoop to resonance.

Internal beeper confirms key pad operations and announces completion of tuning or error conditions.

Memory back-up, built-in serial interface, and pop-up software are included.

A thumbwheel knob provides manual control and fine tuning with the step rate determined by the speed of knob rotation. The IT-1 tunes for maximum receive noise or minimum SWR. Add to this eight programmable memories and a 10-segment multipurpose LED bar and the IT-1 becomes an indispensable part of your IsoLoop tuning system.

AEA's IT-1 IsoTuner

SWR-121
Antenna Analysts
HF & VHF Models
Commercial Models

Get the Picture?

Tuning antennas for lowest SWR in your favorite operating range could be a lengthy process, but not with AEA's line of handheld Antenna Analysts. With the SWR-121 (SWR 1:1—get it?), enter the desired frequency and bandwidth on the keypad, connect to your antenna, and see the graphic display plot your SWR vs. frequency and measure your return loss. Make adjustments and see the result on-the-spot. AEA makes having perfect antennas easy! Two models to choose from: the SWR-121 HF which covers 1-31.999 MHz; and the SWR-121 V/U which covers 120-175, 200-225, and 400-475 MHz. Also see commercial models in back of catalog.

Features

- ***Measures SWR & calculates coax line loss***
- ***Graphs SWR vs. bandwidth over your selected range***
- ***Displays results of antenna adjustments on-the-spot***
- ***Battery powered, fully self contained, works anywhere***
- ***Self referencing, Easy to use***
- ***Hold function retains graphs***
- ***HF Model (1-31.999MHz)***
- ***VHF/UHF Model (120-175, 220-225, 440-475MHz)***
- ***Commercial Models Available***
- ***Optional AC adapter***
- ***Optional software and cable for interfacing with PC computer; lets you save plots to disk & print them out on your printer***
- ***Optional carrying pouch***

HF Antenna Analyst

VHF/UHF Antenna Analyst

The Keypad
The keypad lets you enter the frequency and bandwidth you want to measure. You can define your desired step size and step up the frequency and bandwidth, using up/down keys. You can also use the hold run button to freeze a display for detailed inspection of the plot or to bring the Analyst into your shack, hook it up to your computer, and download the plot for archival purposes.

Works With All Your Antennas
Check beams, verticals, dipoles, and mobile antennas of all types.

The Display
The unique LCD display gives you a plot of your SWR curve, the SWR measurement, and the Return Loss. You can view the SWR over the entire range, not just at one frequency. The display can even be zoomed in or out.

Use Them Anywhere
Take either the SWR-121 HF or V/U with you next time you climb the tower. From there, plug your antenna directly into the SWR-121 and get a precise display of your antenna's SWR curve, independent of the feedline. Subsequently, make tuning adjustments and immediately see the results. Can be battery-powered or run from an external power source.

Test Your Coax
Use the SWR-121 Antenna Analyst to measure the Return/Loss in dB in a length of coax. Now you can be certain it's time to replace that old feedline with fresh coax and new connectors.

Commercial Versions
AEA offers various commercial versions of the Antenna Analysts. We have the 30-137 MHz version for aircraft use. There is the 150-400 MHz version for various commercial applications. All these commercial version are menu driven via five function keys. For more information on these units, see the commercial section on page 27.

Specifications for the SWR-121 HF & SWR-121 V/U

	SWR-121 HF	SWR-121 V/U
Frequency ranges	1.0-31.999 MHz	120-175, 200-225, 400-475 MHz
Characteristic impedance	50/75 ohms, selectable	50 ohms
SWR measurement range	1:1 to 65.5:1	1:1 to 65.5:1
Return loss range	0.3 dB to 50 dB	0.3 dB to 50 dB
Frequency increments	1 kHz	10 kHz
Serial port	9600 baud, XON/XOFF handshake	9600 baud, XON/XOFF handshake
Accuracy	+/- 10% typical, below 10:1	+/- 10% typical, below 10:1
Display resolution	0 to 200 kHz per dot (1 kHz increments)	0 to 990 kHz per dot (10 kHz increments)
Harmonics & spurious	>30 dB below fundamental, typical	>30 dB below fundamental, typical
Display update time	Approximately 9 seconds/sweep	Approximately 2 seconds/sweep
Power requirements (identical for both units)	Internal Eight AA alkaline or high energy lithium batteries External 12-16 VDC	
Physical *(identical for both units)*		
Dimensions	4.3" (109mm)W x 8.5" (216mm)D x 2.25" (57mm)H	
Weight	1 lb, 10 oz (0.74kg)	

Compare the Features

Don't fall for the cheap price, even cheaper quality, and fewer features of other manufacturers' SWR test equipment. They can't do what AEA's SWR-121 Antenna Analysts can.

AEA's SWR-121s can be connected to a computer for remote controlling and for saving plots for future reference—others can't. The SWR-121s can graphically plot the SWR curve over the entire range—others can't. The SWR-121s have a synthesized RF source so there is no need for a frequency counter—others don't. The SWR-121s have an SWR-proportional tone so you can concentrate on making adjustments—others don't. The SWR-121s have a keypad so you can enter or step-up and down width and frequencies—others don't. The list goes on.

A close-up view of the SWR-121's LCD display

4.8
1.0
·= 25 Fc=109980 SWR= 1.6 RL=12.7
The plot's scale—max. and min. SWR values
The frequency width of each dot in the plot, in kHz
The plot's Center Frequency, in kHz
The Standing Wave Ratio at the plot's center frequency
The feedline's Return Loss in dB

AACOM Control and Display Software for the IBM PC

One feature that sets AEA's SWR-121s apart from other antenna analyzers is the ability to connect with a computer for remote control and the saving of plots to your computer's hard drive. With features like remote control of your SWR-121 and computer display of SWR plots, Antenna Analyst Communications (AACOM) software makes it easy for you to get the most from your handheld antenna analyst.

AACOM Features

Once installed, AACOM gives you a host of features to enhance your SWR-121 Antenna Analyst's functionality:

- Save plots to disk and track your antenna's performance over time.
- Control any SWR-121 HF function from the computer keyboard.
- Print plots out on your computer's printer.

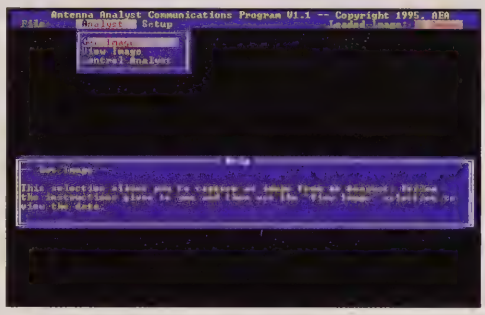
AACOM is menu driven, with help screens designed to make the software a pleasure to use.

You may run AACOM from your hard drive or floppy disk. COM ports 1 through 4 are supported for communications with the SWR-121 Antenna Analyst. LPT1 is supported for image printing on virtually any printer with graphics capability.

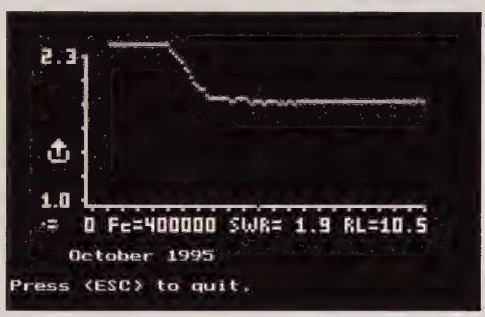
AACOM comes with a serial interface cable to connect between your computer's serial port and the SWR-121's serial connection (see picture to right). It works with DOS 3.1 or later and can be run under Windows as a non-Windows application.

With the system up and running, your computer keyboard emulates the keypad on the SWR-121. Although the SWR-121 may be several feet away, you can set its measurement parameters as though you were holding it in your hand. Beyond the remote control capability, you will like the fact that you can display SWR plots as well as print them on your printer. You can sweep your antenna system, make some adjustments and then sweep it again. By displaying and/or printing the old and new curves, you get a clear picture of the effects your adjustments have had on the system.

It is also possible to save your SWR plots for future comparison. Sweep your antenna system and save the plot(s) to disk. Come back in a few months or a year and sweep it again. Within seconds, you can print the plots, compare the plots and see how your system has changed over time.



Screen shot of AACOM software



A Plot captured by AACOM

System Requirements

AACOM will run on virtually any PC-compatible computer. The only requirement is the computer must have CGA graphics capability. If your computer has an EGA or VGA card, it will most likely be able to run in CGA mode.

Top view of SWR Antenna Analyst

AEA Accessories

Cables, Manuals, & Miscellaneous

Connect with Us!

AEA TNCs are compatible with all major radio manufacturers and come standard with all the cables you need to connect to these radios. However, you may have lost or damaged the cables that came with your TNC. You may have also lost or damaged you manual. Or, you may just want extra accessories. The items below show you what AEA offers in the way of radio cables, power supplies, and other items.

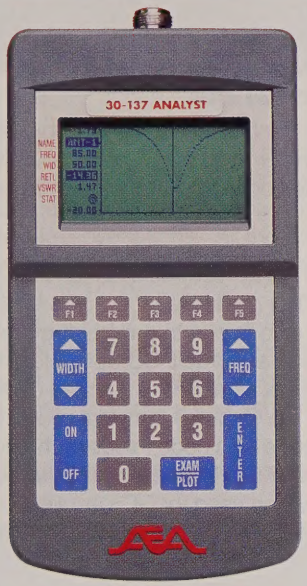
Main Office	**(206) 774-5554**
Customer Service	**(206) 775-7373**
Upgrade Hotline	**(206) 774-1722**
Literature Request Line	**(800) 432-8873**
Fax	**(206) 775-2340**
Compuserve	**76702,1013**

To order, contact your favorite amateur radio equipment dealer.

Upgrades are only available through AEA directly, call the Upgrade Hotline 8:00am to 4:30pm Pacific time Monday through Friday.

Cables	**AEA Part #**
APRS Adapter Cable for GPS use with APRS	099-142
Commercial GPS Adapter Cable	099-141
PK-12, PK-96, DSP-232 Open-ended Radio Cable 5-pin DIN	099-925
PK-232 Radio Cable 5 ft Open-ended	099-954
KH Cable, PK-232 to Kenwood Handheld	099-631
IH Cable, PK-232 to Icom, Yaesu, or Alinco Handheld	099-632
IW Cable, PK-232 to Icom W2A Handheld	099-636
KM Cable PK-232 to Kenwood or Alinco, 8-pin Mic	099-634
KA Cable, PK-232 to Kenwood 13-pin ACC2	099-637
IM Cable, PK-232 to Icom 8-pin Mic	099-633
YM Cable, Pk-232 to Yaesu 8-pin Mic	099-635
IsoLoop 50ft Control Cable with M/F connector	099-048
IsoLoop 100ft Control Cable with M/F connector	099-051
HL-61, Icom Interface Cable for HamLink/Radio Link	099-061
HL-62, Kenwood Interface Cable for HamLink/RadioLink	099-062
HL-63 Yaesu Interface Cable for HamLink/RadioLink	099-063
Manuals	
DSP-2232 Manual	040-053-10
DSP-1232 Manual	040-053-11
PK-900 Manual	040-067-10
DSP-232 Manual	040-088
PK-232 Manual	040-061
PK-232 Technical Reference Manual	040-033-1
Power Supplies	
AC-1 12 VDC, 1/2 Amp Wall Adapter	099-019
AC-4 12 VDC, 1 Amp Wall Adapter	099-031
DC-1 Power Cord with Cigarette Lighter Plug	099-605
Miscellaneous	
Carrying Case, SWR Antenna Analysts w/Belt Loop	099-121
AEA World Clock	099-066
Handy Talkie Belt Loop Holster	099-110
AEA Getting Started in Packet Handbook	040-603

30-137 Antenna Analyst



PlotCon Software

PlotCon software lets you link both the 30-137 and 150-400 to a PC compatible computer. You can remotely control the Antenna Analysts, save plots to disk, and print plots out. Do a screen capture of the plot for an antenna you wish to replace and put it into the request for new equipment; a picture is worth a thousand words.

Commercial Applications

Both the 30-137 and 150-400 Antenna Analysts provide comprehensive antenna performance information in an easy-to-read graphic format for commercial, government, and military applications. The 30-137 (30-137 MHz) is designed to fit the needs of aircraft maintenance personnel. The 150-400 (150-400 MHz) is designed for special military and commercial VHF applications

Feature Packed

The Analysts graphically display antennas' return loss or Voltage Standing Wave Ratio (VSWR) vs. frequency plots on an LCD screen over a return loss range of -.3 to -50 dB or an SWR range of 1:1 to 10:1. The unique LCD readout displays the plot over the entire frequency range, as well as at single frequencies. The keypad allows users to select the center frequency, frequency range, step size, and other parameters. You can store up to 15 user named plots within the unit. There is also menu-driven help right on the LCD display.

Serial Output

These units are equipped with a serial interface to allow computer control. With optional commercial software, (PlotCon), users can store plots obtained by the Analyst in a PC for later reference, comparison, or printing.

Specifications for the 30-137 & 150-400 Antenna Analysts

	30-137	150-400
Frequency ranges	30-137 MHz	150-400 MHz
Characteristic impedance	50ohms	50 ohms
VSWR measurement range	1:1 to 65:1	1:1 to 65:1
Return loss range	-0.3 dB to -50 dB	-0.3 dB to -50 dB
Frequency increments	10 kHz	10 kHz
Manual frequency steps	10 kHz to 250 kHz	10 kHz to 250 kHz
Serial port	19.2 kbaud, XON/XOFF handshake	19.2 kbaud, XON/XOFF handshake
Accuracy	+/- 10% typical, below 10:1 VSWR	+/- 10% typical, below 10:1 VSWR
Display resolution	0 to 1 MHz per dot	0 to 1000 kHz per dot
Total display width	0 to 100 MHz	0 to 200 MHz
Harmonics & spurious	>30 dB below fundamental, typical	>30 dB below fundamental, typical
Display update time	Approximately 2 seconds/sweep	Approximately 2 seconds/sweep
SWR proportional tone	Approx. 200 Hz x VSWR value	Approx. 200 Hz x VSWR value
Battery saver mode	Entered after 5 min. idle	Entered after 5 min. idle
Power requirements (identical for both units)	Internal Eight AA alkaline,high energy lithium batteries or NiCads External 12-16 VDC	
Physical *(identical for both units)*		
Dimensions	4.3" (109mm)W x 8.5" (216mm)D x 2.25" (57mm)H	
Weight	1 lb, 10 oz (0.74kg)	

150-400 Antenna Analyst

New Keypad

These new commercial Antenna Analysts have a full-featured keypad with five function keys at the top. The function keys allow quick and easy access to various menus.

Take It Anywhere

Both the 150-400 and 30-137 are battery powered (Alkaline or NiCad) for use in the field. Power can also be supplied via an optional wall power cube for use on the bench. The units are lightweight, easy-to-carry, constructed to withstand harsh conditions, and come with a moldable 'gumby' foot for standing the unit upright or hanging.

Audible Tones

The units produce audible tones proportional to the measurement—a handy feature when you're eyes are on your antenna. There is also a mismatch limit alarm.

The Perfect Diagnostics Unit

AEA's complete line of Antenna Analysts are the solution to expensive diagnositic equipment. Use our Analysts in the field to troubleshoot and detect antenna problems. When the Antenna Analysts detect serious problems with your antennas, then bring out the $10,000 diagnostic equipment to fix the system. There is no reason you should be lugging around a cumbersome, expensive diagnostic unit for regular maintenance and spot testing—use one of AEA's Antenna Analysts.

COMMERCIAL PRODUCTS

PK-12 Packet TNC

AEA's PK-12 1200 bps VHF/UHF packet TNC

The AEA PK-12 is a 1200 bps packet terminal node controller (TNC) capable of simultaneously send and receiving both wireless data and Global Positioning System location information.

The unit comes with 15K (32K RAM) mailbox space for storing messages and can be expanded to 100K. Gateway firmware allows for node operation and identifies TCP/IP, TheNet, and Net/ROM stations. The unit also operates on very little power; it can even run on a 9-volt battery if necessary!

The powerful GPS firmware allows for simultaneous wireless data and automatic vehicle location (AVL). The PK-12's GPS commands can be remotely accessed and has password protection. GPS receivers can be remotely programmed. GPS information is transmitted at a users set interval and can also be remotely polled at any time.

Packet radio is the perfect solution for those who want an inexpensive way to remotely send/receive data and track mobile vehicles.

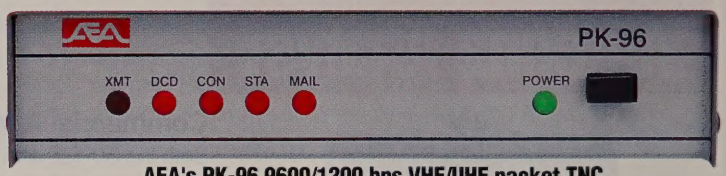
AEA's Commercial GPS Adapter Cable for the PK-12 and PK-96

But, even 9600 bps is too slow

Not really. If you really think 9600 bps is too slow, consider that you would need more base stations (four times as many for 19.2 as with 4.8) to operate at 19.2 kbps. This is expensive—defeating the main advantage (price) of using packet radio in the first place. And what files are your workers in the field accessing from your base station database that are so large? Text files aren't large and neither are sales figures. The only files that are too immense to transfer at 9600 bps would be graphic files such as finger prints, blueprints, photos, and the like. If this is your case, you should think about making your field workers more autonomous with CD-ROMs containing large files.

AEA designed our packet data controllers to integrate with your existing voice dispatch system, allowing you to get more out of your present frequency and equipment.

PK-96 Packet TNC



AEA's PK-96 9600/1200 bps VHF/UHF packet TNC

The PK-96 packet Terminal Node Controller (TNC) is capable of transferring data at either 9600 bps or 1200 bps. The GPS firmware in the PK-96 offers Automatic Vehicle Locating (AVL) and simultaneous wireless data/location tracking.

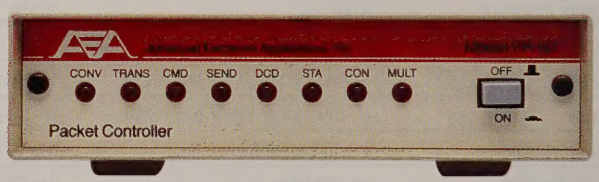
The hardware built into the PK-96 makes communicating at 9600 bps easy using your existing system. The hardware HDLC acts as a coprocessor for the modem, ensuring accurate data throughput. The PK-96 also has a true DCD State Machine for hearing weak signals with an open radio squelch. The Gateway firmware allows the PK-96 to operate as a node for faster throughput and identify TCP/IP, TheNet, and Net/ROM stations. When used for GPS applications, the PK-96 controls the parsing of the GPS information via the commercial GPS Adapter Cable (shown to left).

The Global Positioning System (GPS) firmware built into the PK-96 gives you the ability to transceive wireless data and position information at the same time.

All the GPS features mentioned in other parts of this catalog are included in the commercial version of the PK-96: password protected remote programming of the GPS commands in the PK-96, password protected remote programming of GPS receivers themselves, remote polling, time and date setting from the satellite, dual NMEA sentence parsing.

PK-90 Packet TNC

The PK-90 1200bps (2400bps optional), Packet-only data controller is equipped with features to perform in the most demanding commercial applications. The PK-90 is packed with features such as: SMR/Trunked radio operation, security encryption, remoteable commands for remote operation, extended temperature ranges, and full/half duplex modes.



AEA's PK-90 1200 bps VHF/UHF packet TNC

Digital communication couldn't be easier or more powerful. Only three pieces of hardware are needed: a computer, a PK-90, and an ordinary 16F3 25KHz-Spaced FM or SSB radio. Use any voice path including FM, SSB Microwave, Cellular or combinations. Users can even share the channel with voice and other data users simultaneously. Up to ten connections can be made simultaneously with the PK-90.

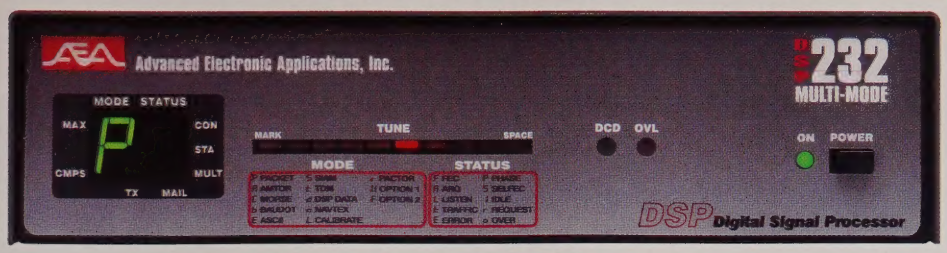
This versatile Packet controller opens the door to unlimited implementations. Business sales figures and inventory data files can be transferred from remote offices, firefighters can log their hours at a disaster site and send them back to headquarters immediately, reports of emergency situations can be written and transmitted back to the main office, messages can be sent to the PK-90 and read later by workers in the field.

A variety of options are available for the PK-90 including: extended tempature ranges, low power, 2400 bps PSK modem, Net/Rom compatibility.

The PK-90 meets FCC EMI conformance Part 15, Subpart J, Class B. Packet frames are encoded according to ARRL AX.25 V.2.0 protocol.

COMMERCIAL PRODUCTS

DSP-232C Multi-Mode Data Controller



AEA's DSP-232C Multi-Mode Data Controller

Looks like a DSP-232, but is even more powerful. The DSP-232C (for Commercial) multi-mode data controller is a powerful tool for commercial applications. All the powerful modes are included: 9600 & 1200 bps VHF Packet, 300 bps HF Packet, PACTOR, AMTOR (ARQ & FEC), RTTY (ASCII & Baudot), and CW. There are 17 modems in all including the two BPSK satellite modems. There are even high, low, and commercial FSK tone pair for international and industrial applications.

The Digital Signal Processor included in the DSP-232 brings high performance, reliability, and reduced down-time all at a cost-effective price. The DSP-232 incorporates the 32 bit Motorola 68340 as the host processor and the Analog Devices 2105 DSP processor.

In Packet, the DSP-232C offers the same features as the PK-90 (described on opposite page). In addition to the Encryption and Link Maintenance by Radio, this unit offers Global Positioning System compatibility.

Special remote tracking, remote polling, remote programming, simultaneous data/GPS tracking, and AVL Global Positioning System features are included. Two radio ports are built in with computer-controlled switching. This unit was built to interface with your existing voice system, providing you with state-of-the -art wireless digital communication at a cost effective price. Call AEA direct at (206) 774-5554 for special applications and configurations.

PK-290 Multi-Mode Data Controller

AEA's PK-290 Multi-Mode Data Controller

The PK-290 is a commercial version of the popular PK-232MBX multi-mode data controller. The PK-290 looks like the PK-232 on the outside, but on the inside it is a whole different animal. It combines the multi-mode features of a PK-232 with the advanced Packet features of the PK-90 (shown on opposite page).

The commercial PK-290 allows users to operate in Morse Code, Baudot, ASCII, AMTOR/SITOR, PACTOR, HF and VHF Packet, B&W FAX receive/transmit, and NAVTEX/AMTEX. The PK-290 can transceive Packet at rates from 45-1200bps (2400bps optional) and even higher rates with external modems.

Special encryption features allow AMTOR, PACTOR, and Packet transmissions to remain secret. Users can even control the PK-290 remotely using the Link Maintenance by Radio commands. The PK-290 improves radio communication efficiency with SMR/Trunked radio operation. There are two switchable radio ports.

Use any voice path including FM, SSB Microwave, Cellular or combinations. Users can even share the channel with voice and other data users simultaneously. PK-232CT (Commercial Tones) units also available. Call AEA direct at (206) 774-5554 for special applications and configurations.

IsoPole™ AirCraft VHF/UHF Antenna

The IsoPole™ AirCraft antenna yields the maximum gain attainable for its length as well as zero-degree angle of radiation.

The IsoPole is a gain-type omnidirectional vertical antenna with excellent decoupling, capable of accepting full legal power, impedance matched at the factory for complete coverage of the 144 aircraft band, with input coaxial connectors and matching section protected from the weather. The mechanical advantages, combined with certain electrical properties of non-cylindrical sleeves have led AEA to seek patent protection for this design.

The IsoPole is designed so that the mounting structure and coax will not become inadvertent parts of the antenna. This is called decoupling and many antennas on the market today fail to decouple, thus ruining the radiation pattern of those antennas. The IsoPole's superior decoupling results in simple tuning and a significant reduction in TVI potential.

Cones offer greater efficiency over obsolete radials which radiate in the horizontal plane. Additionally, the IsoPole offers broad frequency coverage. There is no loss of power output from one end of the band to the other.

When used with SWR-protected solid-state transceivers, you experience a typical SWR of 1.4:1 or better across the entire band. VHF versions include a 50 ohm SO-239 connector recessed within the base sleeve for full weather protection.

The insulating material offers excellent strength and dielectric properties plus superb long-term ultraviolet resistance. The mounting hardware is stainless steel and the decoupling cone and radiating elements are made of corrosion-resistant aluminum alloys. The aerodynamic cones are the only windload and attach directly to your TV mast.

Advanced Electronic Applications, Inc.
P.O. Box C2160
2006—196th Street Southwest
Lynnwood, WA 98036

Main Office	(206) 774-5554
Customer Service	(206) 775-7373
Upgrade Hotline	(206) 774-1722
Literature Request Line	(800) 432-8873
Fax	(206) 775-2340
Compuserve	76702,1013

To order, contact your favorite amateur radio equipment dealer

All specifications subject to change without notice.

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